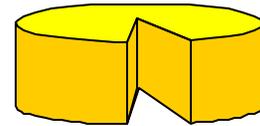
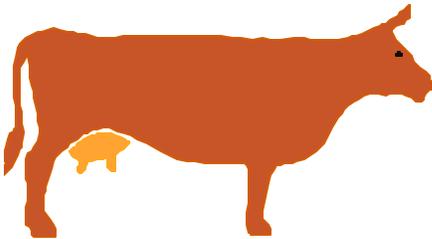




Agricultural
Marketing Service
October 31, 2002

A Study of the Dairy Forward Pricing Pilot Program and Its Effect on Prices Paid Producers for Milk



Prepared for

Senate Committee On Agriculture, Nutrition, and Forestry

And

House Committee on Agriculture

**A Study of the
Dairy Forward Pricing Pilot Program
and Its Effect on
Prices Paid Producers for Milk**

Prepared for
Senate Committee On Agriculture,
Nutrition, and Forestry

And

House Committee on Agriculture

By

Dairy Programs
Agricultural Marketing Service
United States Department of Agriculture

October 31, 2002

Dairy Forward Pricing Pilot Program Study Team

USDA/AMS Dairy Programs, Washington, DC

John Mengel, Chief Economist
Howard McDowell, Senior Agricultural Economist
Jerry Cessna, Agricultural Economist
Clifford Carman, Associate Deputy Administrator for Formulation and Enforcement

Contributors From Federal Milk Order Marketing Administrator Offices

<u>Contributor</u>	<u>City</u>	<u>Federal Milk Marketing Order</u>
Henry Schaefer Steve Joy Harold Ferguson	Minneapolis, MN	Upper Midwest
Ronald Bricker Timothy Hjorth Mike Hattemer	Kansas City, MO	Central
William Pollock	Cleveland, OH	Midwest
John Mykrantz Chis Werner	Seattle, WA	Arizona-Las Vegas Pacific Northwest Western
Steven Duprey	Atlanta, GA	Florida Southeast
Peter Fredericks Brian Riordon	Albany, NY	Northeast
Harold Friedly Jennifer Dupin	Louisville, KY	Appalachian
Cary Hunter Vicki Smithey	Carrollton, TX	Southwest

Special thanks to USDA/AMS personnel Sarah Buikema, Jason Nierman, Lisa Stewart, Kimberly Becht, and Scott Karney for their assistance with this study.

Table of Contents

Chapters	Page
1 – Introduction.....	1-1
2 – Milk Producers as Parties to Forward Contracts.....	2-1
3 – Milk Handlers as Parties to Forward Contracts.....	3-1
4 – Prices for Forward Contract Milk Marketed Under the Program.....	4-1
5 – Summary and Observations.....	5-1

Appendices

A – Legislative Language: Dairy Forward Pricing Pilot Program.....	A-1
B – Final Rule: Dairy Forward Pricing Pilot Program.....	B-1
C – Fact Sheet and Disclosure Statement.....	C-1
D – Computation of Prices for Dairy Forward Pricing Pilot Program Study.....	D-1
E – Producer Questionnaire, Plant Questionnaire, and Cooperative Questionnaire.....	E-1
F – Monthly Price Comparisons: Contract and Non-Contract Milk Prices.....	F-1
G – Farm Cash Receipts Comparisons at Contract and Non-Contract Milk Prices.....	G-1

A Study of the Dairy Forward Pricing Pilot Program And Its Effect on Prices Paid Producers for Milk

Chapter 1

Introduction

The Consolidated Appropriations Act of 2000 amended the Agricultural Marketing Agreement Act of 1937¹ to mandate the implementation of a Dairy Forward Pricing Pilot Program (Program) through December 31, 2004. The law allows proprietary milk handlers² regulated under the Federal milk order program to contract for future deliveries of milk from milk producers or their cooperative associations at prices exempt from minimum Federal milk marketing order blend prices. The program is voluntary, and the exemption applies only to milk used for nonfluid purposes. The law further requires that a study be conducted on the Program to determine the impact of forward contracting on milk prices paid to producers in the United States. The results of the study were initially to be provided to Congress no later than April 30, 2002, but that date was later extended to fall, 2002. The extension allowed for the completion of the study based on data received through questionnaires, which were originally scheduled to be mailed during the period that anthrax disrupted mail deliveries.

Forward Contracting in the Dairy Industry

In its simplest form, a forward contract between a milk buyer and a milk producer (or cooperative) is an agreement to sell a stated quantity of milk, for a stated period into the future, at a stated price.³ A forward contract is a type of risk management instrument that has potential benefits to both parties. Producers and handlers are able to “lock in” prices, thereby reducing risk associated with price and income volatility and enhancing their ability to obtain new or continued financing. A forward price contract is a tool that can be used alone or in conjunction with other pricing tools to manage price risk.

¹ Section 23 of the Agricultural Adjustment Act (7U.S.C. 601 et seq.), reenacted with amendments by the Agricultural Marketing Agreement Act of 1937, as enacted in Public Law 106-113 (113 Stat.1501A -519), signed into law on November 29, 1999. See Appendix A for the legislative language.

² Cooperative associations acting as milk handlers may participate in the Program to the extent that they receive pooled milk from non-member producers or other cooperatives.

³ For a general discussion of agricultural risk management, see **Managing Risk in Farming: Concepts, Research, and Analysis**, by Joy Harwood, Richard Heifner, Keith Coble, Janet Perry, and Agapi Somwaru, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 774. <http://www.ers.usda.gov/publications/aer774/aer774.pdf>

It is common for dairy cooperatives to enter into forward contracts with their members. Prices paid by dairy cooperatives to their members are not subject to Federal order minimum blend prices. By contrast, prior to the Program, proprietary handlers receiving milk pooled under Federal marketing orders⁴ had limited ability to forward contract with producers or dairy cooperatives delivering to them. Such handlers could forward contract, but they were not allowed to pay less than the Federal minimum order blend price to their producers for pooled milk. A handler choosing not to pool a producer's milk could pay the producer less than the Federal order blend. The Program was enacted to expand opportunities for forward price contracting between producers and handlers.

In this study, "eligible handlers" are those handlers that have been enabled to enter forward priced contracts with Federal minimum order price exemption. Since dairy cooperatives receiving only milk from member producers do not have a Federal order minimum price requirement, the Program does not apply to them. Eligible handlers would include proprietary handlers and cooperative handlers that receive milk from sources other than their own members. Plants owned by eligible handlers are referred to as "eligible plants." Likewise, "eligible producers" are those producers that have been enabled to enter forward priced contracts with Federal order price exemption. For the most part, these are independent producers who are not members of cooperatives. However, some producers are members of bargaining cooperatives that do not have a payroll. These producers are paid directly by a proprietary handler subject to Federal minimum order pricing and are therefore eligible producers for the Program.

Description of Program

The Program became effective July 19, 2000, and will expire December 31, 2004. Regulatory requirements are quite limited and apply only to initial contract length; handlers' milk eligible for contracting; dates for signing, filing and making payment; and a disclosure form. (See Appendix B for the final rule published in the *Federal Register*.) Otherwise, milk handlers and producers, or their dairy cooperatives, are free to price milk under forward contracts through any type of mutual agreement. For example, even though milk on the Appalachian Order is accounted for on a skim milk and butterfat basis, forward contracts may be written to pay for milk on a protein, butterfat, other solids, and somatic cell count basis. However, in such markets, the market administrators will continue to account for milk on a volume and butterfat basis and may not have data on component weights and tests. Therefore, the producer will not receive data from the market administrator's office to compare the contract price against the buying handler's pay price for non-contract milk. Furthermore, there are numerous reference milk prices that may be used in writing a contract. Some handlers may offer to contract at a price comparable to the Class III price and add to that a producer price differential and

⁴ For a general discussion of milk pricing and Federal milk marketing orders, see **Milk Pricing in the United States**, by Alden C. Manchester and Don P. Blayney, Economic Research Service, U. S. Department of Agriculture. Agricultural Information Bulletin Number 761. <http://www.ers.usda.gov/publications/AIB761/>.

premiums, while other handlers may offer a price comparable to the milk order blend price plus premiums.⁵

A handler can only forward contract through the Program for milk to be used for nonfluid purposes, milk classified as Class II, III, and IV. If a handler's volume of milk for nonfluid drops below the amount of milk covered by forward contracts and the contract price is below the order's minimum blend price for the month, the handler is required to pay the higher minimum blend price for the quantity of over-contracted milk. The handler may determine which producers get the higher minimum order price for the over-contracted milk. If the handler fails to indicate which milk is over-contracted milk, the market administrator prorates the quantity of over-contracted milk to each producer having a forward contract with the handler. If a handler's contract milk exceeds the handler's volume of milk used in manufacturing and the contract price exceeds the order's minimum blend price for the month, the issue is moot and the handler continues to pay the producer the agreed-upon contract price for the milk covered by the contract.

In order to help dairy farmers adjust to forward contracting, any first-time contract under the Program is limited to 12 months. Thereafter, the producer or dairy cooperative may contract for a longer period of time, but the exemption from paying minimum Federal order blend prices provided by the Program extends only through December 31, 2004.

Participation in the Program is voluntary for dairy farmers or their dairy cooperatives and handlers. For each contract, the handler must provide a fact sheet and disclosure statement to help insure that producers or their dairy cooperatives understand that contracting is voluntary and that they are giving up the minimum price protection provided by Federal milk orders. A signed disclosure statement must be on file with each contract in the market administrator's office before the contract can be recognized as part of the Program. (See Appendix C for the fact sheet and disclosure statement and for Program questions and answers.) Handlers must submit a copy of their forward contracts under the Program to the market administrator's office of the market under which the milk will be regulated. The market administrator reviews each contract to ensure that it complies with regulations. Forward contracts must be signed and dated by the contracting handler and the producer or dairy cooperative prior to the first day of the first month for which they are to be effective and must be in the possession of the market administrator by the fifteenth day of that month. Payments for milk covered by a forward contract must be made on or before the dates applicable to payments for milk that is not under forward contract under the respective Federal orders. This facilitates administration of the Program and eliminates the possibility of disparate treatment that could result from having different payment dates for contract and non-contract milk. Market administrators are not responsible for enforcing forward contracts.

⁵ Variation in the method of pricing can cause difficulty in comparing forward contract prices to Federal order prices. In the proposed rule for the Program, USDA had proposed that the basis for pricing milk under the Program be the same as the basis for pricing regulated milk that is not under forward contract. In the four orders with butterfat and skim milk pricing, forward contracts would have been required to be written in those terms; in the seven orders with milk component pricing, forward contracts would have been required to be written in terms of those same components. This proposal was dropped because commenters saw it as an obstacle to effectively hedging contract prices.

Milk Price and Situation Forecasts During the Study Period

This study covers Program forward contracts with deliveries from September 2000 through March 2002. Only four producers delivered contract milk to two plants in August 2000, the first month of program operation. Therefore, this study considers September 2000 as the first full operational month of the program. March 2002 is the most recent month for which we have comprehensive Program data compiled and submitted from all Federal marketing orders.

Since 1980, milk production has increased at an annual average rate of about 1.2 percent. However, in 2001, milk production declined by about 1.4 percent, causing farm-level milk prices to increase sharply. In 2001, the Federal order blend price averaged \$14.90 per hundredweight (cwt.), reaching a high of \$17.08 per cwt. in September 2001 (Table 1-1). The Class III price, the price upon which many contracts were based, averaged \$13.10 per cwt. in 2001 and reached a high of \$15.90 per cwt. in September. The Class III price in 2001 averaged 35 percent higher than in 2000 (Table 1-2).

United States Department of Agriculture's (USDA) Class III price projections for the study period are compared with actual Federal order minimum Class III prices in Table 1-3. Projected Federal order Class III prices for 2001 were consistently projected for less than the actual announced Federal order Class III prices with the exception of the 4th delivery quarter. Projections for 2000 and 2002 tended to be higher than realized prices.

An examination of futures market prices reveals similar expectations. Table 1-4 displays a comparison of average Chicago Mercantile Exchange (CME) Class III futures prices for the study period with actual announced Federal order Class III prices. In 2001, futures prices were below realized prices with only a few exceptions. As with the USDA projections, Class III futures prices for 2000 and 2002 tended to be higher than actual announced Class III prices.

These forecasts and others did not anticipate the changing supply and demand conditions of 2001. As a result, contract prices for 2001 tended to be much lower than non-contract market prices for milk. We believe that if the study had covered a longer period of time, the results may have been substantially different. As stated in USDA's Final Rule for the Dairy Forward Pricing Pilot Program:

“Over time, we would expect to see forward prices to producers below the blend price in some months and above the blend price in other months.... On balance, the pluses and minuses should cancel each other out since, one could argue, the desired objective of forward contracting is to remove the uncertainty and variability in prices...”⁶

⁶ 65 FR 44413

Attributes of Contracts

There were numerous variations in how contracts were structured over the study period. Contract volumes varied greatly. The largest contract was a 12-month contract for about 168 million pounds of milk, or about 14 million pounds per month. On the other end of the scale, contracts for 10,000 pounds of milk per month were not uncommon.

The delivery periods covered by contracts varied greatly. Contracts ranged from 1 month to 18 months in length. Some contracts provided for the same price each month while others provided for separate prices each month. For this analysis, the latter type contracts were considered separate contracts for each month. For example, if a producer signed a contract to deliver 100,000 pounds of milk in each of the months from January through June 2001 at a different specified price each month, this study views such an arrangement as 6 separate monthly contracts.

The time from contract signing to the first delivery under the contract ranged from 1 to 20 months. Table 1-5 displays a cross tabulation of the lengths of contracts and time from signing to date of first delivery. As discussed above, producers were limited to 12 months for the duration of the first contract signed. However, it was not uncommon for producers to sign multiple contracts over a short period of time that covered more than 12 months of future deliveries. A large number of producers signed 12-month contracts that were not scheduled for initial delivery until 2 to 4 months later. Many producers signed 1-month contracts for delivery from 1 to 9 months after signing.

There were several ways in which handlers defined the product to be delivered under contracts. Most commonly, contracts specify pounds of milk to be delivered. Of these contracts, some further required the remainder of the producer's production to be delivered at the handler's non-contract price. Some contracts specified only the pounds of butterfat, protein, and other solids to be delivered, rather than pounds of milk. Other contracts specified milk pounds with minimum requirements for components. Many contracts specified a certain percentage of the producer's marketings – up to 100 percent – to be delivered at the contract price. There were 7 cases of complementary contracts where a specified quantity was to be delivered for one contract price, and the balance of the producer's deliveries would be accepted and paid at another contract price.

Table 1-6 delineates the contract pricing methods according to the defined product to be delivered. The most common type of pricing method specified payment per hundredweight of milk. For these contracts, contract-milk prices were computed as they would be for non-contract milk. Then a contract adjustment was applied based on the difference between the contract price and the announced Class III price at 3.5 percent butterfat. In some contracts, the mechanics concerning this price adjustment were absent from the contract or were only referred to in vague terms.

Many contracts were priced in terms of components, usually butterfat, protein, and other solids. Some contracts were priced in terms of butterfat and nonfat solids. Contracts in

the Southeast were written in terms of butterfat and skim milk—the same terms used in the Southeast Federal milk order. There were some contracts that were stated in terms of a cheese yield value. A formula was used to convert the cheese yield value to a milk price.

Contracts that define delivery volumes in *pounds* perhaps carry some risk for the producer—risk that producers with contracts that define delivery volumes in terms of *percentages of production* do not incur—because of the potential for coming up short on deliveries. The data indicates that some producers—particularly those pooled in the Upper Midwest order—did not always deliver the contracted amount. There also were some producers who came up short on deliveries in the Central, Southeast, and Mideast orders. The data indicates that there were no producers who delivered less than the contracted amount in the Pacific Northwest or Western orders. Table 1-7 displays the short deliveries for the Upper Midwest. Table 1-8 displays the short deliveries for the Central, Southeast, and Mideast orders combined. Some contracts contained provisions for penalties for short deliveries.

Data Used for the Analysis

Two types of data were collected for the study. In order to evaluate the participation and the impacts of the Program on producers and handlers, Federal milk order market administrators collected data on contracted milk volumes and prices. In order to evaluate the industry's perception of the Program, surveys were used to gather facts and opinions from participating and non-participating producers, cooperatives, and handlers. Further, information on the attributes of participants and non-participants were collected in the surveys.

Payroll and Contract Data. Each Federal milk order market administrator's office provided data concerning forward contracts from payroll records and copies of the contracts that they received. Data were collected for the 19-month period of September 2000 through March 2002. Monthly data are from four categories: (1) Federal order data, including number of producers, number of plants, and volume of producer deliveries; (2) contract data, including prices, quantities, and dates; (3) participating producer data, including quantities actually delivered and prices received; and (4) participating handler data, including milk volumes received and number of eligible producers per handler.

For years some dairy cooperatives have offered their member-producers the opportunity to lock in milk prices for future deliveries. Since some dairy cooperatives compete with proprietary handlers for a milk supply, the expanded forward contracting opportunities for proprietary handlers may have had an effect on contracts offered by dairy cooperatives to their members. Specific information concerning such contracts is unavailable to us. We also do not have data on forward contracts of cooperatives or proprietary handlers that were in effect before the Program began. Consequently, we are

unable to compare forward contracts in effect prior to the Program with contracts included in the Program.

The letter R that appears in some of the tables denotes restricted data. Section 8d of the Agricultural Marketing Agreement Act of 1937, as amended, prohibits the Secretary of Agriculture from releasing any information of a proprietary nature. Data provided to the Secretary by fewer than three parties is considered restricted because aggregation of such information may not prevent individual disclosure.

Survey Data. To obtain market participant perceptions and attributes, questionnaires were designed for dairy producers, cooperatives, and plants (See Appendix E). On or about April 10, 2002, each Federal order market administrator's office sent questionnaires by U.S. mail to:

- Eligible producers -- all producers whose milk was pooled on a Federal order during June 2001 and who were not members of a cooperative association, with the exception of certain cooperative producers paid by proprietary handlers. Additionally, questionnaires were sent to producers who had been delivering to Kraft's Melrose, Minnesota, plant prior to May 2001.
- Eligible plants -- all proprietary plants and cooperative plants (excluding cooperative plants only receiving milk from members) that received Federal order pooled milk during June 2001. A questionnaire was sent to each plant, regardless of whether the plant was owned by a single-plant firm or one of several owned by a multi-plant firm.
- All cooperatives that delivered Federal order pooled milk to a proprietary plant during June 2001. Each cooperative was sent only one questionnaire even though several cooperatives have milk pooled in more than one Federal order.

In concert with e-government initiatives, questionnaires also were provided electronically on the Internet, and respondents were given a choice of responding by postage-paid return mail or on the Internet. Questionnaires were sent to 16,686 eligible producers, to 144 cooperatives, and to 705 plants (including 96 cooperative plants). Response rates were 21.9 percent for producers, 35.2 percent for plants, and 60 percent for cooperatives. Of the 4,140 total responses, 132 were through the Internet. Of the 132 Internet responses, 65 were from producers.

Table 1-1: Federal Order Blend Prices (\$/cwt)

Month	2000	2001	Percent change over previous year	2002	Percent change over previous year
Jan.	11.67	12.86	10.2	13.18	2.5
Feb.	11.48	12.71	10.7	12.84	1.0
Mar.	11.59	13.64	17.7	12.32	-9.7
Apr.	11.63	14.32	23.1		
May	11.94	15.55	30.2		
June	12.19	16.36	34.2		
July	12.71	16.60	30.6		
Aug.	12.49	16.84	34.8		
Sept.	12.74	17.08	34.1		
Oct.	12.35	15.45	25.1		
Nov.	12.11	14.19	17.2		
Dec.	12.55	13.01	3.7		
Averages	12.11	14.90	23.0	12.78	-2.2

Table 1-2: Federal Order Class III Prices (\$/cwt)

Month	2000	2001	Percent change over previous year	2002	Change over previous year
Jan.	10.05	9.99	-0.6	11.87	18.8
Feb.	9.54	10.27	7.7	11.63	13.2
Mar.	9.54	11.42	19.7	10.65	-6.7
Apr.	9.41	12.06	28.2		
May	9.37	13.83	47.6		
June	9.46	15.02	58.8		
July	10.66	15.46	45.0		
Aug.	10.13	15.55	53.5		
Sept.	10.76	15.90	47.8		
Oct.	10.02	14.60	45.7		
Nov.	8.57	11.31	32.0		
Dec.	9.37	11.80	25.9		
Averages	9.74	13.10	34.5	11.38	8.4

Table 1-3: Average USDA Class III Milk Price Projections^{1/} Compared to Federal Order Class III Prices

USDA Price Projections, Quarterly Averages(\$/cwt)							
Projection quarter	Delivery quarter						
	2000 3rd	2000 4 th	2001 1st	2001 2nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	10.40	11.03	10.40	9.80	---	---	---
4 th	---	9.63	9.80	9.80	10.45	---	---
2001							
1 st	---	---	10.03	10.00	10.63	11.70	---
2 nd	---	---	---	12.82	13.87	13.62	12.25
3 rd	---	---	---	---	15.38	14.40	11.90
4 th	---	---	---	---	---	13.25	11.48
2002							
1 st	---	---	---	---	---	---	11.43

Source: USDA; Livestock, Dairy and Poultry Situation and Outlook

1/ Quarterly projections are calculated by averaging monthly USDA projections.

Federal Order Class III Prices, Quarterly Averages (\$/cwt)

	Delivery quarter						
	2000 3rd	2000 4 th	2001 1st	2001 2 nd	2001 3 rd	2001 4 th	2002 1st
Class III Price	10.52	9.32	10.56	13.63	15.64	12.57	11.38

Source: USDA; Agricultural Marketing Service

Averages of monthly Federal Order Class III prices are used to calculate average quarterly Class III prices.

USDA Projections Minus Actual Class III Prices (\$/cwt)

Projection quarter	Delivery quarter						
	2000 3rd	2000 4 th	2001 1st	2001 2nd	2001 3 rd	2001 4 th	2002 1st
2000							
3 rd	-0.12	1.71	-0.16	-3.83	---	---	---
4 th	---	0.31	-0.76	-3.83	-5.19	---	---
2001							
1 st	---	---	-0.53	-3.63	-5.00	-0.87	---
2 nd	---	---	---	-0.81	-1.77	1.05	0.87
3 rd	---	---	---	---	-0.25	1.83	0.52
4 th	---	---	---	---	---	0.68	0.10
2002							
1 st	---	---	---	---	---	---	0.05

Table 1-4: CME Class III Futures Prices Compared to Federal Order Class III Prices**CME Class III Future Prices, Quarterly Averages (\$/cwt)**

Signing quarter	Delivery quarter						
	2000 3rd	2000 4 th	2001 1st	2001 2 nd	2001 3rd	2001 4th	2002 1st
2000							
3 rd	10.82	10.98	10.61	10.65	11.25	---	---
4 th	---	9.42	9.84	10.13	11.04	11.25	---
2001							
1 st	---	9.39	10.38	11.11	12.25	11.89	11.17
2 nd	---	---	---	13.44	14.33	12.98	11.57
3 rd	---	---	---	---	15.33	13.77	11.99
4 th	---	---	---	---	15.89	12.05	11.70
2002							
1 st	---	---	---	---	---	11.81	11.48

Source for daily settlement prices: The Wisconsin Center for Dairy Research and Department of Agricultural and Applied Economics at the University of Wisconsin-Madison, http://www.aae.wisc.edu/future/front_futures.htm.

Class III futures prices are calculated as simple averages of all daily futures settlement prices relevant to each signing-delivery quarter combination.

Federal Order Class III Prices, Quarterly Averages (\$/cwt)

	Delivery quarter						
	2000 3rd	2000 4th	2001 1 st	2001 2 nd	2001 3 rd	2001 4th	2002 1st
Class III Price	10.52	9.32	10.56	13.63	15.64	12.57	11.38

Averages of monthly Federal Order Class III prices are used to calculate average quarterly Federal Order Class III prices.

CME Class III Futures Prices Minus Federal Order Class III Prices (\$/cwt)

Signing quarter	Delivery quarter						
	2000 3rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4th	2002 1st
2000							
3 rd	0.30	1.66	0.05	-2.98	-4.39	---	---
4 th		0.10	-0.72	-3.50	-4.60	-1.32	---
2001							
1 st	---	0.07	-0.18	-2.52	-3.39	-0.68	-0.21
2 nd	---	---	---	-0.19	-1.31	0.41	0.19
3 rd	---	---	---	---	-0.31	1.20	0.61
4 th	---	---	---	---	0.25	-0.52	0.32
2002							
1 st	---	---	---	---	---	-0.76	0.10

Table 1-5: Contract Lengths and Time From Signing to First Delivery

Time from signing to first delivery in months	Contract length in months													Totals
	1 1/	2	3	4	5	6	7	8	9	10	11	12	18	
Less than 1 2/	---	---	---	---	2	---	---	---	---	---	---	---	---	2
1	184	4	2	179	4	69	---	37	68	58	24	203	2	834
2	201	5	6	109	1	3	4	---	84	3	4	99	---	519
3	239	2	1	3	---	50	3	---	6	1	---	692	---	997
4	238	6	---	2	2	5	---	---	2	---	---	113	---	368
5	233	---	1	2	4	3	2	---	---	1	---	12	1	259
6	219	2	2	---	4	11	1	1	6	---	---	6	---	252
7	190	3	---	---	1	2	---	---	---	---	---	---	---	196
8	159	---	1	1	1	1	---	---	---	---	---	1	---	164
9	100	1	---	---	---	41	---	---	---	---	---	2	---	144
10	46	---	1	1	---	9	---	---	---	---	---	---	---	57
11	33	3	---	---	---	---	---	---	---	---	---	---	---	36
12	18	---	1	1	---	---	---	---	---	---	---	---	---	20
13	6	---	---	---	---	---	---	---	---	---	1	1	---	8
14	2	---	---	---	---	---	---	---	2	---	---	1	---	5
15	2	---	---	---	---	3	---	---	---	---	---	1	---	6
16	1	---	---	---	---	---	---	---	---	---	---	---	---	1
17	1	---	---	---	---	---	---	---	---	---	---	---	---	1
18	1	---	---	---	---	---	---	---	---	---	---	---	---	1
20	1	---	---	---	---	---	---	---	---	---	---	---	---	1
Totals	1,874	26	15	298	19	197	10	38	168	63	29	1131	3	3,871

1/ Some contracts specified delivery over multiple months but separate prices for each month. For this analysis, such arrangements were counted as multiple one-month contracts. For example, if a producer signed a contract to deliver 100,000 pounds of milk in each of the months from January through June 2001, at a different specified price each month, this analysis views such an arrangement as 6 separate monthly contracts.

2/ There were 2 contracts that scheduled deliveries in the same month as they were signed. The first deliveries under these contracts were not included in the Pilot Program.

Table 1-6: Contract Pricing Method by Defined Product to be Delivered**Product: Pounds of milk**

Contract pricing method	Number of contracts	Contract pounds in millions
Price per cwt 1/	2,003	1,293
Butterfat, protein, other solids	829	843
Cheese yield	102	90
Butterfat, skim	12	7
Totals	2,946	2,233

1/ One contract in this category allows for contract pound changes based on certain conditions.

Product: Pounds of milk with minimum pounds of components required

Contract pricing method	Number of contracts	Contract pounds in millions
Price per cwt.	2	1.2
Butterfat, protein, other solids	125	95.4
Totals	127	96.6

Product: Percentage of milk production

Contract pricing method	Number of contracts	Average contract percentage
Price per cwt.	15	97
Butterfat, protein, other solids 2/	619	94
Cheese yield	107	47
Butterfat, skim	11	70
Butterfat, nonfat solids	10	100
Total	762	---
Weighted average percentage	---	87

2/ 78 contracts in this category allow for the contract percentage to be changed after a period of time.

Product: Other specified 3/

	Number of contracts	Contract pounds in millions
Component pounds only	29	NA
Balance of production	7	NA

3/ All of these contracts use butterfat, protein, and other solids prices.

Table 1-7: Producer Deliveries of Less Than Amount Contracted, Upper Midwest Federal Order Market

Month	Total contract pounds, all pooled producers	Scheduled contract pounds			Percentage short for producers delivering less than contracted	Percentage short for all pooled producers
		for producers delivering less than contract amount	Delivery shortages on contract pounds			
	<i>1000 pounds</i>			<i>Percent</i>		
2000						
Sept.	25,210	1,089	151	13.9	0.6	
Oct.	26,704	923	113	12.2	0.4	
Nov.	26,751	1,357	143	10.5	0.5	
Dec.	27,678	895	159	17.7	0.6	
2001						
Jan.	88,714	755	133	17.6	0.2	
Feb.	85,238	2,210	205	9.3	0.2	
Mar.	94,031	293	46	15.8	0.0	
Apr.	124,290	16,203	2,435	15.0	2.0	
May	64,583	15,004	2,063	13.7	3.2	
June	63,140	14,873	2,317	15.6	3.7	
July	69,787	11,362	1,492	13.1	2.1	
Aug.	97,088	12,263	1,759	14.3	1.8	
Sept.	123,934	17,198	2,235	13.0	1.8	
Oct.	93,473	18,360	2,056	11.2	2.2	
Nov.	120,789	20,088	3,061	15.2	2.5	
Dec.	121,058	18,791	2,585	13.8	2.1	
2002						
Jan.	30,828	0	0	N/A	N/A	
Feb.	20,429	500	33	6.6	0.2	
Mar.	39,531	150	7	4.7	0.0	
Totals	1,343,256	152,314	20,992	13.8	1.6	

Table 1-8: Producer Deliveries of Less Than Amount Contracted; Central, Mideast, and Southeast Federal Milk Order Markets Combined

Month	Total contract pounds, all pooled producers	Scheduled contract pounds			Percentage short for producers delivering less than contracted	Percentage short for all pooled producers
		for producers delivering less than contract amount	Delivery shortages on contract pounds			
		<i>1000 pounds</i>			<i>Percent</i>	
2000						
Sept.	19,564	75	17		22.8	0.1
Oct.	22,712	45	7		14.6	0.0
Nov.	24,030	1,865	482		25.9	1.9
Dec.	24,919	65	5		7.4	0.0
2001						
Jan.	38,844	368	41		11.1	0.1
Feb.	41,166	448	64		14.3	0.2
Mar.	50,796	280	33		11.8	0.1
Apr.	54,730	285	89		31.2	0.2
May	74,626	1,055	206		19.5	0.3
June	81,818	860	69		8.0	0.1
July	94,988	1,842	230		12.5	0.2
Aug.	91,925	3,097	327		10.6	0.4
Sept.	62,683	743	223		29.9	0.4
Oct.	60,119	623	237		38.1	0.4
Nov.	53,586	1,001	252		25.2	0.5
Dec.	53,772	741	184		24.8	0.3
2002						
Jan.	31,598	0	0		N/A	N/A
Feb.	27,819	0	0		N/A	N/A
Mar.	27,203	0	0		N/A	N/A
Totals	37,898	13,393	2,464		18.4	0.3

Chapter 2

Milk Producers as Parties to Forward Contracts

Characteristics of Contracting Producers

An average of 653 producers per month participated in the Dairy Forward Pricing Pilot Program (Program) from September 2000 through March 2002.¹ The number of producers whose milk was pooled in the Federal order markets averaged 66,555 per month, and producers eligible for the program averaged 16,616 per month over the same period. Eligible producers comprised about 25 percent of pooled producers. Contracting producers averaged about 4 percent of the eligible producers and about 1 percent of all Federal order producers (Table 2-1).

Contracting producers had farms located in 16 states (Table 2-2). Wisconsin and Minnesota producers comprised over three-quarters of participants, with Wisconsin having 45 percent and Minnesota having 32.6 percent.

Producers with milk pooled in seven of the eleven Federal Milk Marketing Orders participated in the Program during the study period. These included the Central, Mideast, Northeast, Pacific Northwest, Southeast, Upper Midwest, and Western orders. We refer to these orders as the “Seven Orders.” The Upper Midwest had the largest numbers of both producers and handlers participating. Much of the data concerning each of the other six orders is restricted since the data are for less than three handlers or producers. For this reason, most of the data is aggregated for the six orders other than the Upper Midwest. We refer to these orders as the “Six Orders.”

Enumerated in Tables 2-1, 2-3, and 2-4 respectively, are the numbers of producers delivering pooled milk, producers eligible for the Program, and contracting producers for all Federal orders, the Upper Midwest, and the Six Orders. Forward contracts for the beginning of 2001 appeared to be attractive relative to price forecasts, and many of the contracts were for the calendar year. As a result, the participation rates increased markedly in 2001 compared to the last third of 2000. Participation peaked in April of 2001 with 1,141 producers—78.6 percent of the 1,452 total participants for the study period—delivering milk under forward contract.

The number of contracting producers declined by 361 in May of 2001. The drop in the number of producers primarily is due to the sale of a proprietary plant to cooperative associations. When the cooperatives purchased the plant and began paying producers, the contracts were no longer part of the Program. In May 2001, there was also a shift of contracts from the Upper Midwest to the Mideast order. While contracting producers

¹ Only four producers delivered contract milk to two plants in August of 2000, the first month of program operation. Therefore, this study considers September 2000 as the first fully operational month of the program.

under the Upper Midwest order dropped from 898 in April to 375 in May, the number increased in the Six Orders from 243 to 405.

Another sharp drop in the number of contracting producers under Federal orders occurred at the beginning of 2002—from over 700 in December 2001 to less than 175 in the first quarter of 2002. It is likely that many producers chose not to participate in 2002 as the result of losses on contract milk throughout much of 2001. At least one handler that offered contracts for 2001 was unable to contract for any milk in the first quarter of 2002. Also, it is possible that given less interest from producers, ambivalent handlers felt less competitive pressure to offer contracts and decided not to offer contracts for 2002.

Contract Producer Milk

Pooled deliveries over the study period averaged 9,969 million pounds per month, and eligible producer deliveries averaged 2,449 million pounds per month (Tables 2-5). As noted above, a monthly average of 66,555 producers had milk pooled in Federal orders, and 16,616 were eligible to participate in the Program (Table 2-1). From these monthly averages for milk volumes and producers numbers, we compute monthly averages of 150 thousand pounds per pooled producer and 147 thousand pounds per eligible producer. The monthly average per participating producer was 358 thousand pounds (Table 2-8). Thus, the average contracting producer delivery was more than twice the average producer delivery for all Federal orders. Moving into 2002, the difference was greater with the monthly average being 863 thousand pounds delivered per contracting producer.

Although 3.9 percent of the eligible producers per month on average participated in the Program during the study period (Table 2-1), contract milk from these producers averaged 5.3 percent of eligible producer milk (Table 2-5). However, contract milk deliveries represented about only 1.3 percent of the total pooled milk during the study period.

Producers' contract signing and milk delivery activity is aggregated by quarter in Table 2-6. The most active quarter for signing contracts was the fourth quarter of 2000. In the Upper Midwest, the greatest number of producers signing contracts in the fourth quarter of 2000 delivered contract milk in the first and second quarters of 2001. In the Six Orders, the greatest number of producers signing contracts in the fourth quarter of 2000 delivered contract milk in the second and third quarters of 2001.

Although the number of contracting producers fell sharply in 2002, the proportion of participants with large deliveries increased sharply. Contracting producers are categorized according to the size of total monthly deliveries in Table 2-7 and graphed in Figure 2-1. The smaller producers—those with total deliveries of less than 100,000 pounds per month—made up the largest category on average at 43 percent. Producers delivering 100,000 to 400,000 pounds per month came in a close second, making up about 40 percent of the total number on average. The percentage of large producers in the program grew from around 3 percent at the start of the Program to around 23 percent

at the end of the study period. Most of this change is due to a larger decrease in participation by smaller producers.

The relative participation of small producers to large producers over the study period can be observed in the monthly averages of contract and total pounds delivered by contracting producers. Table 2-8 displays these averages for the Upper Midwest Federal milk market order, the Six Orders, and the Seven Orders. Participants in the Upper Midwest have generally been smaller on average than those in the Six Orders. In the Upper Midwest, the average of total deliveries per contracting producer started at about 123 thousand pounds per month at the beginning of the study period and grew to about 776 thousand pounds per month by the end of the study period. The Six Orders' average monthly deliveries began in the range of 400 to 600 thousand pounds per month in 2000, dipped down into the range of 300 to 400 thousand for 2001, and shot up to over 1 million pounds per month in 2002. The average monthly deliveries per contracting producer are displayed in Figure 2-2.

Although there are some exceptions, deliveries on average for contracting producers typically ranged from 60 percent to 80 percent of total deliveries. However, the distribution of producers by contract delivery as percentage of total deliveries is widely dispersed as displayed in Table 2-9. More than half of the contract producers fell in the 25 to 75 percent range. More than a fourth of the participating producers contracted for 100 percent of total deliveries.

Table 2-1: Producers: Total, Program^{1/} Eligible, and Contracting Producers, by Month, All Federal Milk Marketing Orders

Year and month	Number of producers delivering pooled milk	Number of Program eligible producers	Number of contracting producers	Contracting producers as percentage of	
				Producers delivering pooled milk	Program eligible producers
2000					
Sept.	69,547	17,340	304	0.4	1.8
Oct.	68,806	17,099	317	0.5	1.9
Nov.	67,983	16,969	324	0.5	1.9
Dec.	67,111	16,771	319	0.5	1.9
2001					
Jan.	67,709	16,838	994	1.5	5.9
Feb.	66,678	16,886	1,005	1.5	6.0
Mar.	66,942	16,836	1,032	1.5	6.1
Apr.	66,522	17,170	1,141	1.7	6.6
May	66,258	17,040	780	1.2	4.6
June	65,969	16,074	819	1.2	5.1
July	66,540	16,206	865	1.3	5.3
Aug.	66,339	16,211	873	1.3	5.4
Sept.	65,847	16,359	873	1.3	5.3
Oct.	65,132	16,296	822	1.3	5.0
Nov.	66,384	16,468	743	1.1	4.5
Dec.	65,413	16,220	721	1.1	4.4
2002					
Jan.	65,572	16,336	169	0.3	1.0
Feb.	64,759	16,225	137	0.2	0.8
Mar.	65,031	16,366	171	0.3	1.0
19-month average	66,555	16,616	653	1.0	3.9

^{1/} Program refers to Dairy Forward Pricing Pilot Program

Table 2-2: Program Participating Producers^{1/} by State

State	Number of producers	Percent
WI	655	45.1
MN	473	32.6
ID	95	6.5
SD	61	4.2
IL	48	3.3
NY	37	2.5
IA	32	2.2
OH	21	1.4
MO	11	0.8
AR	6	0.4
NE	4	0.3
OK	3	0.2
OR	2	0.1
PA	2	0.1
MI	1	0.1
UT	1	0.1
Total	1,452	100.0

^{1/} Program Participating Producers refers to the total number of producers who delivered contract milk as part of the Dairy Forward Pricing Pilot Program during the study period.

Table 2-3: Upper Midwest Federal Order Producers: Total, Program^{1/} Eligible, and Contracting Producers, by Month

Year and month	Number of producers delivering pooled milk	Number of Program eligible producers	Number of contracting producers	Contracting producers as percentage of	
				Producers delivering pooled milk	Program eligible producers
2000					
Sept.	17,362	6,314	238	1.4	3.8
Oct.	16,870	6,004	247	1.5	4.1
Nov.	16,223	5,904	254	1.6	4.3
Dec.	15,978	5,890	254	1.6	4.3
2001					
Jan.	16,027	5,885	825	5.1	14.0
Feb.	15,483	5,874	822	5.3	14.0
Mar.	15,331	5,910	837	5.5	14.2
Apr.	14,635	5,877	898	6.1	15.3
May	13,753	5,259	375	2.7	7.1
June	12,748	4,359	361	2.8	8.3
July	12,831	4,258	369	2.9	8.7
Aug.	13,371	4,368	374	2.8	8.6
Sept.	15,363	5,175	519	3.4	10.0
Oct.	15,035	5,133	487	3.2	9.5
Nov.	15,418	5,183	431	2.8	8.3
Dec.	14,670	4,925	422	2.9	8.6
2002					
Jan.	14,926	5,090	93	0.6	1.8
Feb.	14,494	5,018	72	0.5	1.4
Mar.	14,172	4,817	100	0.7	2.1
19-month average	14,984	5,329	420	2.8	7.9

^{1/} Program refers to Dairy Forward Pricing Pilot Program.

Table 2-4: Six Orders^{1/} Producers: Total, Program^{2/} Eligible, and Contracting Producers, by Month

Year and month	Number of producers delivering pooled milk	Number of Program eligible producers	Number of contracting producers	Contracting producers as percentage of	
				Producers delivering pooled milk	Program eligible Producers
2000					
Sept.	46,748	10,086	66	0.1	0.7
Oct.	46,478	10,122	70	0.2	0.7
Nov.	46,258	10,082	70	0.2	0.7
Dec.	45,423	9,910	65	0.1	0.7
2001					
Jan.	46,066	9,988	169	0.4	1.7
Feb.	45,705	10,026	183	0.4	1.8
Mar.	46,023	9,978	195	0.4	2.0
Apr.	46,323	10,340	243	0.5	2.4
May	47,010	10,915	405	0.9	3.7
June	47,641	10,853	458	1.0	4.2
July	48,409	11,085	496	1.0	4.5
Aug.	47,543	10,982	499	1.0	4.5
Sept.	45,161	10,338	354	0.8	3.4
Oct.	44,868	10,324	335	0.7	3.2
Nov.	45,606	10,443	312	0.7	3.0
Dec.	45,351	10,438	299	0.7	2.9
2002					
Jan.	45,052	10,420	76	0.2	0.7
Feb.	44,876	10,373	65	0.1	0.6
Mar.	45,198	10,619	71	0.2	0.7
19- Month Average	46,092	10,385	233	0.5	2.2

1/ Six Orders refers to the Federal Milk Marketing orders other than the Upper Midwest with participation in the Program. These include the Central, Mideast, Northeast, Pacific Northwest, Southeast, and Western orders.

2/ Program refers to Dairy Forward Pricing Pilot Program.

Table 2-5: Contract Pounds Delivered as a Percentage of Total Pooled Milk in All Federal Order Markets and as a Percentage of Pooled Milk from Eligible Producers

Year and month	Pooled Milk			Contract Milk as a Percentage of	
	Total	Program ^{1/} Eligible	Contracted	Total	Program Eligible
	<i>1000 Pounds</i>			<i>Percent</i>	
2000					
Sept.	9,170,023	2,301,802	46,592	0.51	2.02
Oct.	9,518,128	2,390,307	51,288	0.54	2.15
Nov.	9,146,453	2,301,586	53,144	0.58	2.31
Dec.	9,445,742	2,385,246	54,456	0.58	2.28
2001					
Jan.	9,984,196	2,435,805	127,384	1.28	5.23
Feb.	9,002,305	2,237,077	126,135	1.40	5.64
Mar.	10,147,728	2,494,623	144,748	1.43	5.80
Apr.	9,933,591	2,484,366	176,841	1.78	7.12
May	10,512,566	2,521,950	142,175	1.35	5.64
June	10,258,231	2,415,738	151,545	1.48	6.27
July	10,251,589	2,436,232	169,016	1.65	6.94
Aug.	10,025,733	2,468,079	195,753	1.95	7.93
Sept.	9,742,172	2,402,271	205,016	2.10	8.53
Oct.	9,841,319	2,379,186	170,892	1.74	7.18
Nov.	10,013,597	2,497,104	195,199	1.95	7.82
Dec.	10,573,390	2,588,609	199,840	1.89	7.72
2002					
Jan.	10,838,714	2,655,551	86,514	0.80	3.26
Feb.	9,956,112	2,348,263	74,383	0.75	3.17
Mar.	11,049,089	2,784,104	100,636	0.91	3.61
19-Month Total	189,410,677	46,527,898	2,471,557	1.30	5.31
19-Month Average	9,968,983	2,448,837	130,082	1.30	5.31

^{1/} Program refers to Dairy Forward Pricing Pilot Program

Table 2-6: Program^{1/} Producers by Contract Signing and Milk Delivery Quarter

Upper Midwest Federal Order							
Signing Quarter	Delivery Quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	241	252	71	69	46	29	1
4 th	---	3	666	666	289	279	1
2001							
1 st	---	---	39	107	129	125	14
2 nd	---	---	---	25	82	72	11
3 rd	---	---	---	---	13	20	11
4 th	---	---	---	---	---	2	51
2002							
1 st	---	---	---	---	---	---	23

Six Orders ^{2/}							
Signing Quarter	Delivery Quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	67	74	92	90	91	81	---
4 th	---	1	78	209	210	79	---
2001							
1 st	---	---	34	121	136	106	24
2 nd	---	---	---	87	162	115	14
3 rd	---	---	---	---	15	30	24
4 th	---	---	---	---	---	2	24
2002							
1 st	---	---	---	---	---	---	18

Seven Orders ^{2/}							
Signing Quarter	Delivery Quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	308	326	163	159	137	110	1
4 th	---	4	744	875	499	358	1
2001							
1 st	---	---	73	228	265	231	38
2 nd	---	---	---	112	244	187	25
3 rd	---	---	---	---	28	50	35
4 th	---	---	---	---	---	4	75
2002							
1 st	---	---	---	---	---	---	41

In each of these tables, it is inappropriate to add numbers of producers across for signing quarters. Producers who delivered over multiple quarters would be counted more than once. Likewise, it is inappropriate to add numbers of producers down for delivery quarters. Producers who signed multiple contracts over more than one quarter for delivery in the same quarter would be counted more than once.

1/ Program refers to Dairy Forward Pricing Pilot Program.

2/ Seven Orders refers to the Federal Milk Marketing Orders with participation in the Program. These include the Central, Mideast, Northeast, Pacific Northwest, Southeast, Upper Midwest, and Western orders. Six Orders refers to all of these orders except for the Upper Midwest.

Table 2-7: Program^{1/} Contracting Producers Categorized by Total Pounds Delivered Per Month

Year and month	Delivery pounds per month								Total number of producers per month
	100,000 or less		100,000 to 400,000		400,000 to 1 million		1 million or more		
	# of producers	Percent	# of producers	Percent	# of producers	Percent	# of producers	Percent	
2000									
Sept.	171	56.3	109	35.9	15	4.9	9	3.0	304
Oct.	170	53.6	116	36.6	22	6.9	9	2.8	317
Nov.	183	56.5	111	34.3	18	5.6	12	3.7	324
Dec.	171	53.6	118	37.0	18	5.6	12	3.8	319
2001									
Jan.	505	50.8	413	41.5	51	5.1	25	2.5	994
Feb.	554	55.1	372	37.0	52	5.2	27	2.7	1,005
Mar.	498	48.3	438	42.4	66	6.4	30	2.9	1,032
Apr.	558	48.9	470	41.2	75	6.6	38	3.3	1,141
May	318	40.8	348	44.6	72	9.2	42	5.4	780
June	356	43.5	340	41.5	80	9.8	43	5.3	819
July	359	41.5	373	43.1	84	9.7	49	5.7	865
Aug.	361	41.4	359	41.1	89	10.2	64	7.3	873
Sept.	379	43.4	347	39.7	85	9.7	62	7.1	873
Oct.	351	42.7	347	42.2	85	10.3	39	4.7	822
Nov.	306	41.2	295	39.7	82	11.0	60	8.1	743
Dec.	279	38.7	294	40.8	82	11.4	66	9.2	721
2002									
Jan.	33	19.5	59	34.9	37	21.9	40	23.7	169
Feb.	34	24.8	54	39.4	23	16.8	26	19.0	137
Mar.	27	15.8	69	40.4	35	20.5	40	23.4	171
19-month average	295	43.0	265	39.7	56	9.8	36	7.5	653

1/ Program refers to Dairy Forward Pricing Pilot Program.

Table 2-8: Average Total Pounds and Contracted Pounds Per Program^{1/} Contracting Producer

Year and Month	Upper Midwest			Six Orders ^{2/}			Seven Orders ^{2/}		
	Total	Contracted		Total	Contracted		Total	Contracted	
	<i>1000 pounds</i>		Percent	<i>1000 pounds</i>		Percent	<i>1000 pounds</i>		Percent
2000									
Sept.	123.4	105.3	85.3	445.3	326.3	73.3	193.3	153.3	79.3
Oct.	128.0	107.7	84.1	488.3	352.8	72.2	207.6	161.8	77.9
Nov.	125.5	104.8	83.5	505.5	379.1	75.0	207.6	164.0	79.0
Dec.	132.5	108.3	81.8	580.9	414.4	71.3	223.8	170.7	76.3
2001									
Jan.	155.4	107.4	69.1	316.7	229.6	72.5	182.8	128.2	70.1
Feb.	145.2	103.4	71.3	333.1	224.6	67.4	179.4	125.5	70.0
Mar.	163.6	112.3	68.6	388.9	260.3	66.9	206.2	140.3	68.0
Apr.	186.1	135.7	72.9	346.9	226.3	65.2	220.4	155.0	70.3
May	255.6	166.7	65.2	309.4	196.7	63.6	283.5	182.3	64.3
June	255.3	168.5	66.0	302.9	198.1	65.4	281.9	185.0	65.6
July	265.6	185.1	69.7	293.6	203.1	69.2	281.7	195.4	69.4
Aug.	390.9	254.9	65.2	291.9	201.3	68.9	334.4	224.2	67.1
Sept.	329.2	234.5	71.2	338.4	235.4	69.6	332.9	234.8	70.5
Oct.	253.9	187.7	73.9	336.9	237.2	70.4	287.8	207.9	72.2
Nov.	400.9	273.2	68.1	351.4	248.3	70.7	380.1	262.7	69.1
Dec.	423.1	280.7	66.4	399.8	272.1	68.1	413.4	277.2	67.0
2002									
Jan.	709.7	331.5	46.7	1113.4	732.7	65.8	891.2	511.9	57.4
Feb.	463.0	283.3	61.2	1077.7	830.6	77.1	754.6	542.9	71.9
Mar.	775.8	395.2	50.9	1182.2	860.7	72.8	944.5	588.5	62.3
19-month average	299.1	191.9	69.5	494.9	348.9	69.8	358.3	242.7	69.9

1/ Program refers to Dairy Forward Pricing Pilot Program.

2/ Seven Orders refers to the Federal Milk Marketing Orders with participation in the Program. These include the Central, Mideast, Northeast, Pacific Northwest, Southeast, Upper Midwest, and Western orders. Six Orders refers to all of these orders except for the Upper Midwest.

Table 2-9: Program^{1/} Contracting Producers per Month Categorized by Contract Pounds as Percentage of Total Delivery

Year and month	Number of producers per percentage category					Total number of producers
	Less than or equal to 25%	Greater than 25%, less than or equal to 50%	Greater than 50%, less than or equal to 75%	Greater than 75%, less than 100%	100% ^{2/}	
2000						
Sept.	10	51	51	27	165	304
Oct.	10	56	57	30	164	317
Nov.	6	56	62	30	170	324
Dec.	8	62	58	22	169	319
2001						
Jan.	40	276	220	70	388	994
Feb.	28	250	228	102	397	1,005
Mar.	41	288	238	83	382	1,032
Apr.	44	320	248	107	422	1,141
May	49	331	214	87	99	780
June	44	309	234	127	105	819
July	101	233	234	159	138	865
Aug.	100	211	256	160	146	873
Sept.	97	190	258	181	147	873
Oct.	97	194	233	147	151	822
Nov.	98	156	215	137	137	743
Dec.	99	165	212	119	126	721
2002						
Jan.	35	70	48	9	7	169
Feb.	18	57	41	11	10	137
Mar.	34	70	45	14	8	171
Average number	50	176	166	85	175	653
Average percent	7.7	27.0	25.4	13.1	26.8	100.0

1/ Program refers to Dairy Forward Pricing Pilot Program.

2/ There were some contracts, priced per hundredweight, for which contract payment adjustments were made to producer payments based on the contract pounds that were more than 100 percent of pounds actually delivered. Contract payment adjustments were based on the difference between the contract price and the Class III price at 3.5 percent butterfat. Such adjustments can add to, or subtract from, non-contract prices that would have otherwise been received.

Figure 2-1: Percentage of Participating Producers By Pounds of Total Deliveries Per Month

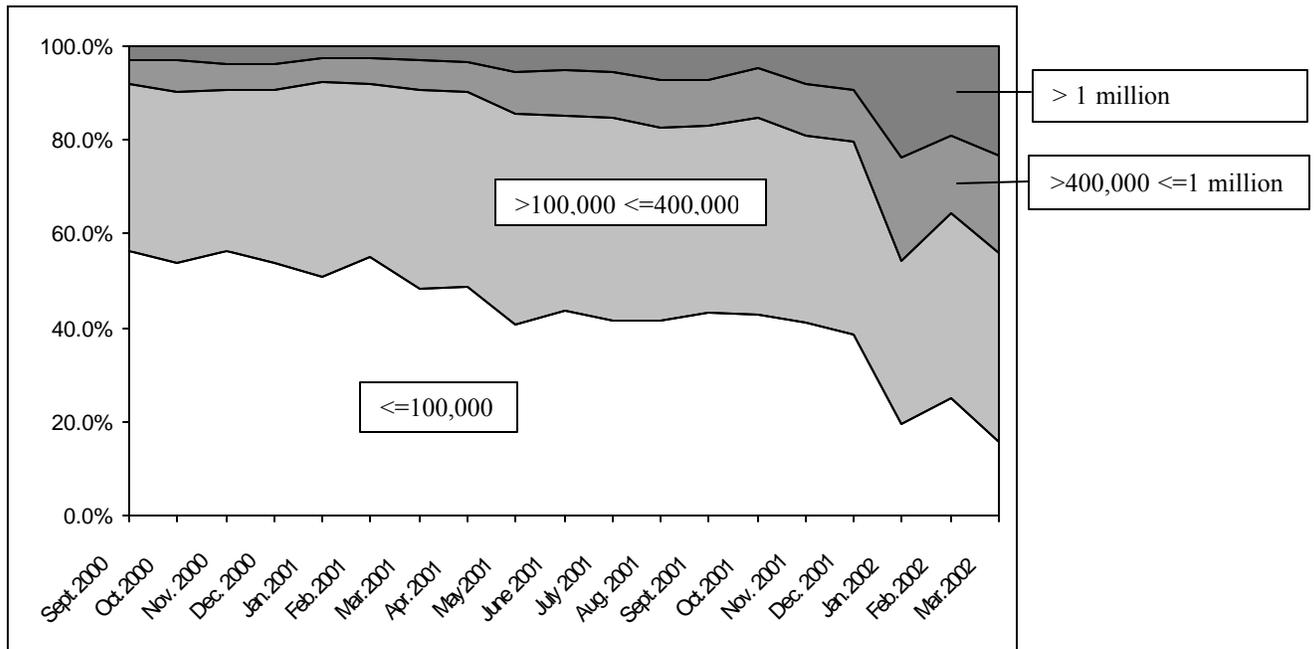
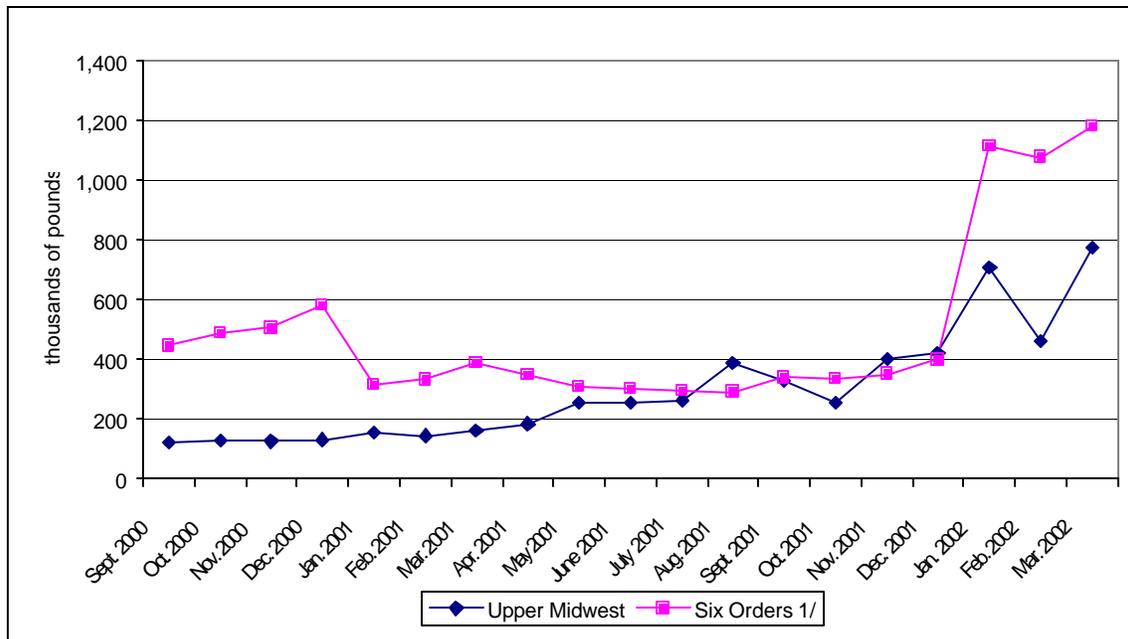


Figure 2-2. Average Total Pounds Per Participating Producer Delivered Per Month



1/ Six Orders refers to the Federal Milk Marketing orders other than the Upper Midwest with participation in the Program. These include the Central, Mideast, Northeast, Pacific Northwest, Southeast, and Western orders.

Producer Questionnaire Response

The producer questionnaire was designed to provide some insight into the factors that affect producers' decisions on whether or not to participate in the Program. Questions were asked to determine whether producers were accustomed to using risk management tools in their business, whom they relied upon for advice concerning the Program, why they did or did not participate, and whether they were satisfied with the results.

Appendix E includes a copy of the questionnaire that was sent to 16,686 producers who were eligible to participate in the Program. Responses were tabulated and statistical tests were used to analyze differences in response rates and differences in effects of variables on participants and non-participants.²

Response Rates and Program Participation Rate

Of the 16,686 questionnaires that were sent to eligible producers, 3,646 responses were received for an overall response rate of 21.9 percent. Responses were received from producers in all orders (Table 2-10). The largest response rates are for those orders where only one or very few surveys were sent: 100 percent response for Arizona-Las Vegas, 100 percent for Florida, and 54.5 percent for the Southwest. The Southeast had the lowest response rate of 14.9 percent. The remaining orders had response rates ranging from 18 to 31 percent.

Of the 3,646 responses received, 313 (8.6 percent) indicated that they had participated in the Program (Table 2-11). In this discussion, we refer to data received from Federal Milk Order Market Administrators as population data while we refer to data obtained from the questionnaire as survey data. From the population data, we are able to estimate the response rates of participants vs. non-participants. The best estimate of the number of eligible producers equals the number of questionnaires sent—16,686. According to the population data, 1,452 (8.7 percent) producers participated in the program over the study period. From these numbers, we estimate the number of participants and non-participants that did not respond. Both Program participants and non-participants are well represented in the survey. The response rate for participants is about 21.6 percent while the response rate of non-participants is 21.9 percent (Table 2-12). The difference between response rates of participants and non-participants is statistically insignificant. The participation rate of respondents, 8.6 percent, is very close to the 8.7 percent participation rate of the population.

² For analyses that compare two groups, i.e. respondents v. non-respondents or participants v. non-participants, two-way frequency table tests were used. Results of these tests appear in footnotes of the tables. A high chi-square value with a corresponding low probability value indicates that there are significant differences between the two groups with respect to the variable being analyzed. A probability value of .01, for example, indicates that there is only a 1 percent probability that differences between the two groups with respect to the variable are due to chance alone. Non-responses, shown as "Unknown" in the tables are not figured in the chi-square calculations. For more discussion concerning two-way frequency table tests, see *Applied Statistics and the SAS Programming Language* by Ronald P. Cody and Jeffrey K. Smith, Prentice Hall, 4th edition, Upper Saddle, New Jersey, pp. 75-78.

Participation versus Non-Participation

Program participation rates of responding producers did not differ greatly by size of producers. Respondent participation rates are highest, about 10.5 percent for the two middle size groupings (marketings of 100,000 to 400,000 pounds per month and 400,000 to 1,000,000 pounds per month), followed by a 9 percent participation rate for producers marketing greater than 1,000,000 pounds per month, and a 6 percent participation rate for producers marketing less than 100,000 pounds per month. There is some dissimilarity between the population and survey data with respect to size of participants. Of the participating respondents to the survey, the highest percentage, 45.7 percent, had monthly marketings of 100,000 to 400,000 pounds per month. The second largest group with 34.2 percent had marketings of less than 100,000 pounds per month (Table 2-13). The population data indicate that, as a monthly average, the highest percentage of participating producers, 43 percent, had marketings of less than 100,000 pounds per month. The group with 100,000 to 400,000 pound marketings per month made up 39.7 percent of the average number of participants (Table 2-7). With the survey, all producer size categories are well represented even though the distribution is not a perfect representation of the population.

Responding eligible producers are concentrated in the Upper Midwest (1,188), the Mideast (993), and the Northeast (760), followed by the Central (272) orders. (See Table 2-14.) The Upper Midwest order had the most contracting respondents with 158 (50.5 percent), followed by the Mideast order with 65 (20.8 percent) and the Central order with 53 (16.9 percent). The rest of the orders had less than 10 percent each. Both the population data and the survey data indicate that the Upper Midwest had the greatest number of participating producers. However, the population data indicate that the monthly average of participants with milk pooled on the Upper Midwest order was about 64.3 percent of total participants, considerably more than the 50.5 percent indicated by the survey (Tables 2-1 and 2-3). The survey indicates that the Central order had the highest percentage of participating respondents, 20 percent. Although not displayed in this report, this is consistent with the population data which shows that the Central order had the highest participation rate in most months.³ Both the survey and the population data indicate that the Upper Midwest had the second highest participation rate. The survey participation rates for the other orders are fairly consistent with the population participation rates.

The States with highest respondent participation rates are South Dakota at 34.3 percent, followed by Minnesota at 25.2 percent, Idaho at 24 percent, Illinois at 19.7 percent, and Wisconsin at 13.1 percent (Table 2-15). New York, while having more participants than Idaho, South Dakota, or Illinois, had a participation rate of only 4.3 percent. Both the survey and population data indicate that the highest numbers of participating producers were located in Wisconsin and Minnesota. However, the percentage of participating respondents located in Minnesota, 13.1 percent, is significantly lower than the percentage reflected by the population data—32.6 percent. Both the survey and the population data

³ Data is not provided for each order since this could reveal proprietary information relevant to less than three handlers or producers. Data for the Central order is included with the Six Orders in this report.

indicate that participating producers are concentrated primarily in the central upper Midwestern States and that their milk is marketed through the three orders in the central United States. These three orders have a higher proportion of Class III utilization than for all Federal orders.

A major factor associated with respondents contracting under the Program is the use of other instruments such as forward contracts, futures contracts, or options to reduce price risk for fuel, feed, and milk (Table 2-16). Of the participating producers, about 42 percent reported management of fuel or feed price risks, while only about 27 percent of non-participants reported such activities. Over half (53.4 percent) of participating respondents managed milk price risk through methods other than the Program, while only 7.7 percent of non-participants did so. It is likely that many contracting producers evaluated the risk reduction benefit under the Program along with possibilities on the futures and options markets. Contracting producers may have used the Program in conjunction with futures and options contracts.

Significant differences exist between participating and non-participating respondents with respect to number of potential buyers. Of the responding participants, 182 (58.1 percent) reported 2 or more potential buyers of their milk, while 56.4 percent of non-participants reported only 1 potential buyer (Table 2-17). This possibly coincides with a higher degree of competition in areas where forward contracts are more likely to be offered.

Finally, there are significant differences between participants and non-participants with respect to handler offerings. Of the participating respondents, 72.5 percent report that their handlers offered contracts to all producers, as compared to 21.5 percent for non-participating producers (Table 2-18).⁴

Reasons for and Results of Contracting

Contracting producers were asked why they contracted. Of the responding participating producers, 55.3 percent had only one reason, but 39 percent of them had more than one reason (Table 2-19b). Nearly three-fourths of responding contracting producers (74.4 percent) contracted to assure a more stable cash flow, and 7.0 percent contracted to satisfy lender requirement. Almost 45 percent of the contracting respondents contracted because the offered price was considered attractive (Table 2-19a). Twenty-eight (8.9 percent) participating producers indicated that there were other reasons for participating in the program. Among the comments of these producers, 8 respondents stated that they participated in order to gain experience with the Program, and 5 respondents indicated that a handler representative influenced them to sign.

⁴ One of the selections for response to this survey question is “Do not know.” Those who marked this selection could have possibly been in one of two groups. They either were not aware as to whether or not their handlers offered contracts, or they were not aware of the extent of the contract offerings. Of the responding participants, 16.6 percent selected “Do not know,” while 60.3 percent of the non-participants marked this selection.

Most prominent among the contracting producers' means of evaluating forward contract prices were the futures markets and the producers' own forecasts—each with about 55 percent (Table 2-20a). Among the other selections, 37.4 percent used other professional forecasts, including those of USDA, universities, and private forecasters, while 20.8 percent of the respondents compared the forward contracts from competing handlers. Twenty-five respondents (8 percent) indicated that they used other means of evaluating contract prices. Among the comments of these producers, 8 respondents stated that a broker assisted them, and 6 respondents commented that they had relied on the handler. Nearly 60 percent used two or more sources of information to evaluate prices (Table 2-20b).

Concern that producers could be pressured into signing contracts “to maintain a relationship with a buyer” led to a second question to directly address the issue (Table 2-21). Only 2.6 percent of the contracting producers strongly agreed. This response is consistent with the reason given by 1.6 percent of the contracting producers who indicated that they signed contracts to maintain a relationship with their buyer (Table 2-19a). An additional 4.6 percent of participants slightly agreed that a contract was necessary to maintain a buyer. However, nearly 75 percent of participants disagreed, either slightly (14.7 percent) or strongly (57.2 percent) that a contract was necessary to maintain a buyer for their milk.

Nearly sixty percent of contracting respondents who realized lower prices than the market levels indicated that they likely will not contract in the future (33.5 percent) or that they will reduce future contract volumes (24 percent). (See Table 2-22a.) Consistent with these responses is the response from 57.8 percent of the contracting producers who thought the price loss was too large of a tradeoff for the price risk avoided (Table 22b). However, 26.2 percent of the contracting producers considered the price loss a reasonable cost to assure a stable price. This question was marked as not applicable by 10.9 percent of the producers who indicated that the contract price exceeded the comparable market price.

Non-Participant Characteristics

Responding producers who did not participate in the Program, 3,313 producers, comprised 91.4 percent of the respondents. Such producers offered a number of reasons for not forward contracting. The primary reason given by 43.9 percent of the non-contracting producers was that their buyer did not offer contracts (Table 2-23a). Similarly, 43.3 percent indicated that they considered the offered contract price to be too low.

About 1 percent of the non-contracting producers reported that their handler denied them a contract. Of those denied a contract, 35.5 percent (11 producers) said they were denied because their volumes of delivery were too small (Table 2-24a). For those who indicated other reasons for denial, comments revealed that a few respondents confused the Dairy Forward Pricing Pilot Program with the Dairy Options Pilot Program, stating that the

program was not offered in their county.

Producer Survey Response Rates and Participation Rate

Table 2-10. Response rates by order

Federal Milk Marketing Order	Number Responding	Percent of Total Responding	Number Not Responding	Percentage Not Responding	Response Rate
Appalachian	182	4.99	663	5.08	21.5
AZ-Las Vegas	1	0.03	0	0.00	100.0
Central	272	7.46	740	5.67	26.9
Florida	1	0.03	0	0.00	100.0
Mideast	993	27.24	3,240	24.85	23.5
Northeast	760	20.84	3,433	26.33	18.1
Pac. Northwest	23	0.63	52	0.40	30.7
Southeast	164	4.50	933	7.15	14.9
Southwest	6	0.16	5	0.04	54.5
Upper Midwest	1,188	32.58	3,826	29.34	23.7
Western	56	1.54	148	1.13	27.5
Totals	3646	100.00	13040	100.00	21.9

Chi-square 4187.2, DF 16, Prob<.0001

For chi-square test, AZ-Las Vegas, Florida, and Southwest are combined.

Table 2-11. Did you sign a contract as part of the *Forward Contracting Pilot Program*?

Respondent Program Participation	Number of Responses	Percentage
Yes (Participants)	313	8.6
No (Non-participants)	3,333	91.4
Total Number of Respondents	3,646	100.0

Table 2-12. Estimated response rates of participants vs. non-participants

Program participation	Number Responding	Percentage Responding	Number Not Responding	Percentage Not Responding	Response Rate
Participants	313	8.6	1,139	7.0	21.6
Non-participants	3,333	91.4	11,901	93.0	21.9
Totals	3,646	100.0	13,040	100.0	21.9

Chi-square 0.08, DF 1, Prob=0.7765

Tables Comparing Survey Responses of Participants and Non-Participants

Table 2-13. Pounds of milk produced and marketed per month during the past year:

Pounds Marketed	Participants	Percentage of		Participation Rate
		Participants	Non-Participants	
Less than 100,000	107	34.2	1,552	6.4
100,000 to 400,000	143	45.7	1,223	10.5
400,000 to 1,000,000	34	10.9	286	10.6
More than 1,000,000	21	6.7	212	9.0
Unknown	8	2.6	60	13.3
Totals	313	100.0	3,333	8.6

Chi-square 17.7, DF 3, Prob=0.0005

1/ Unknown indicates non-response to the survey question.

Table 2-14. My farm delivers to a plant/handler regulated under Federal Milk Order Name:

Federal Milk Marketing Order	Participants	Percentage of		Participation Rate
		Participants	Non-Participants	
Upper Midwest	158	50.5	1,030	13.3
Mideast	65	20.8	928	6.5
Central	53	16.9	219	19.5
Northeast	21	6.7	739	2.8
Southeast	8	2.6	156	4.9
Western	4	1.3	52	7.1
Appalachian 1/	3	1.0	179	1.6
Pacific Northwest	1	0.3	22	4.3
Southwest	0	0.0	6	0.0
Arizona-Las Vegas	0	0.0	1	0.0
Florida	0	0.0	1	0.0
Totals	313	100.0	3,333	8.6

Chi-square 126.6, DF 5, Prob <.0001

The six orders with the least numbers of responding participants were grouped for the chi-square test.

1/ For the Appalachian order, 3 respondents indicated that they participated in the Program even though there was no participation for that order. These producers may have been pooled on the Appalachian order at the time the survey was taken but on another order when they delivered milk under a Program contract.

Table 2-15. My farm is located in (State):

State	Participants	Percentage of		Participation Rate
		Participants	Non-Participants	
WI	176	56.2	1,172	13.1
MN	41	13.1	122	25.2
ID	12	3.8	38	24.0
SD	12	3.8	23	34.3
IL	13	4.2	53	19.7
NY	16	5.1	357	4.3
Other	43	13.7	1,568	2.7
Totals	313	100.0	3,333	8.6

Chi-square 227.0, DF 6, Prob<.0001

Table 2-16. Have you used forward contracts, futures contracts, or options to protect yourself against price changes in: (Select all that apply.)

	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Feed				
Yes	131	41.9	920	27.6
No	182	58.1	2,413	72.4
Totals	313	100.0	3,333	100.0

Chi-square 2184.8, DF 2, Prob<.0001

	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Fuel				
Yes	130	41.5	901	27.0
No	183	58.5	2,432	73.0
Totals	313	100.0	3,333	100.0

Chi-square 2198.4, DF 2, Prob<.0001

	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Cull Cows				
Yes	2	0.6	38	1.1
No	311	99.4	3,295	98.9
Totals	313	100.0	3,333	100.0

Too few using cull cow price risk management to perform a useful chi-square test.

	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Milk (other than <i>Forward Contracting Pilot Program</i>)				
Yes	167	53.4	255	7.7
No	146	46.6	3,078	92.3
Totals	313	100.0	3,333	100.0

Chi-square 2360.1, DF 2, Prob<.0001

Table 2-17. How many potential buyers for your milk did you have during the past year?

	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Number of Potential Buyers				
One	128	40.9	1,879	56.4
Two or three	114	36.4	997	29.9
Four or more	68	21.7	331	9.9
Unknown 1/	3	1.0	126	3.8
Totals	313	100.0	3,333	100.0

Chi-square 51.3, DF 2, Prob<.0001

1/ Unknown indicates non-response to the survey question.

Table 2-18. The handler receiving your milk:

Handler Contract Offerings	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Offered forward contracts to <i>all</i> producers	227	72.5	717	21.5
Offered forward contracts to <i>some</i> producers	10	3.2	79	2.4
Offered forward contracts to <i>no</i> producers 1/	23	7.3	487	14.6
Do not know	52	16.6	2010	60.3
Unknown 2/	1	0.3	40	1.2
Totals	313	100.0	3,333	100.0

Chi-square 392.8, DF 3, Prob<.0001

1/ There was some obvious misinterpretation of either this question or the participation question. Some producers who indicated participation in the Program also indicated that their handler offered forward contracts to no producers.

2/ Unknown indicates non-response to the survey question.

Responses to Questions Concerning Only Participants in the Pilot Program

Table 2-19a. What were your reasons for signing a forward contract? (Select all that apply)

Reasons For Signing Forward Contracts	Number of responding participants	Percentage
To assure a more stable cash flow	233	74.4
To satisfy lender requirement	22	7.0
Attractive contract price	140	44.7
To maintain relationship with my current buyer	5	1.6
Other reason	28	8.9
Did not answer	18	5.8

Percentages do not add to 100% because respondents could select more than one answer.

Table 2-19b. Number of Selections, Reasons for Signing Forward Contracts

Number of Selections, reasons for forward contracting	Number of responding participants	Percentage
None	18	5.8
One	173	55.3
Two	111	35.5
Three	11	3.5
Totals	313	100.0

**Table 2-20a. What information did you rely upon to determine a suitable contract price?
(Select all that apply.)**

Information sources used for contract price evaluation	Number of responding participants	Percentage
Discussions with neighbors	62	19.8
USDA, university, and/or private forecasts	117	37.4
Futures market prices	175	55.9
Comparison to other forward contract offers	65	20.8
My own analysis of my cost of production and my own price forecast	173	55.3
Other information	25	8.0
Did not answer	14	4.5

Percentages do not add to 100% because respondents could select more than one answer.

Table 2-20b. Number of Selections, Information Sources Used for Contract Price Evaluation

Number of selections for information sources used to evaluate price	Number of responding participants	Percentage
None	14	4.5
One	117	37.4
Two	86	27.5
Three	66	21.1
Four	21	6.7
Five	8	2.6
Six	1	0.3
Totals	313	100.0

Table 2-21. Although the *Forward Contracting Pilot Program* is voluntary, I felt it necessary to contract in order to maintain a relationship with my current buyer?

Agreement or disagreement: Participation necessary to maintain relationship with buyer	Number of responding participants	Percentage
Strongly agree	8	2.6
Slightly agree	14	4.5
Don't know	56	17.9
Slightly disagree	46	14.7
Stongly disagree	179	57.2
Unknown 1/	10	3.2
Totals	313	100.0

1/ Unknown indicates non-response to the survey question

Table 2-22a. If your contract price was less than the relevant comparison price (Class III price, blend price, etc.) during the contract period, how will this affect your future contracting decisions?

Effect of comparatively low contract price on future decisions	Number of responding participants	
	Number of responding participants	Percentage
Probably will not forward contract again	105	33.5
Probably will reduce the amount of milk production I forward Contract	75	24.0
Will have no effect as I evaluate the next contract	95	30.4
Not applicable. My contract price was greater than the relevant comparison price during the contract period.	27	8.6
Unknown 1/	11	3.5
Totals	313	100.0

1/ Unknown indicates non-response to the survey question.

Table 2-22b. If you contracted to reduce price volatility and the contract price was less than the relevant comparison price during the contract period, do you consider the difference to be a reasonable tradeoff for the price risk you avoided?

Price loss as tradeoff for risk avoided	Number of responding participants	
	Number of responding participants	Percentage
Yes, it was reasonable.	82	26.2
No, it was too large.	181	57.8
Not applicable. My contract price was greater than the relevant comparison price during the contract period.	34	10.9
Unknown 1/	16	5.1
Totals	313	100.0

1/ Unknown indicates non-response to the survey question.

Responses to Questions Concerning Only Non-Participants in the Pilot Program

Table 2-23a. If you did not sign a forward contract under the *Forward Contracting Pilot Program*, please mark all of the following statements that apply to you.

Reasons for Not Participating in the Pilot Program	Number of responding non-participants	
	Number of responding non-participants	Percentage
My handler did not offer forward contracts and I did not want to change handlers.	1,462	43.9
I thought that the market price would be higher than the contract price offered.	1,444	43.3
I heard about the contract offer too late to contract.	88	2.6
I probably will sign a forward contract in the near future.	128	3.8
I wished to sign a forward contract, but the handler denied a contract to me.	31	0.9
Did not answer.	618	18.5

Percentages do not add to 100% because respondents could select more than one answer.

Table 2-23b. Number of Selections Chosen, Reasons for Not Participating in Program

Number of Selections, Reasons for Not Participating	Number of responding non-participants	
	Number of responding non-participants	Percentage
None	618	18.5
One selection	2,314	69.4
Two selections	369	11.1
Three selections	28	0.8
Four selections	3	0.1
Five selections	1	0.0
Totals	3,333	100.0

Table 2-24a. If you were denied a contract even though your handler had contracts with other producers, what was the reason(s)?

Reasons for contract denial	Number of responding non-participants indicating contract was denied	
	Number of responding non-participants indicating contract was denied	Percentage
Volume too small	11	35.5
I was too late to contract. Contracts were offered on a “first come, first serve” basis.	2	6.5
Quality problems	1	3.2
Other reason	9	29.0
Did not answer	9	29.0

Percentages do not add to 100% because respondents could choose more than one answer.

Table 2-24b. Number of Selections Chosen, Reasons for Contract Denial

Number of selections, reasons for contract denial	Number of responding non-participants indicating contract was denied	
	Number of responding non-participants indicating contract was denied	Percentage
None	9	29.0
One	21	67.7
Two	1	3.2
Totals	31	100.0

Chapter 3

Milk Handlers as Parties to Forward Contracts

Handler and Plant Participation

A total of 22 handlers participated in the Dairy Forward Pricing Pilot Program (Program) at some time during the study period. These handlers had plants receiving contract milk regulated under 7 of the 11 Federal milk marketing orders (Seven Orders). There were 4 Federal milk orders—Appalachian, Florida, Southwest and Arizona-Las Vegas—for which no contract milk was pooled during the study period of September 2000 through March 2002. Handler participation reached a peak in September and October 2001 when 21 handlers were receiving forward contract milk.

The Federal order market with the greatest number of handlers offering forward contracts was the Upper Midwest. Since January 2001, there have been more handlers receiving contract milk in the Upper Midwest than in all other orders combined (Table 3-1). During the peak period, there were 14 handlers in the Upper Midwest receiving contract milk compared with 10 handlers in the Central, Mideast, Northeast, Pacific Northwest, Southeast, and Western orders combined (Six Orders). For this comparison, a handler with plants in two or more markets in the Six Orders was counted only once.

The number of handlers pooling contract milk under the Mideast order increased from 2 to 3 during the period June through August 2001. This was the result of an Upper Midwest plant pooling on the Mideast order during this period to take advantage of the differences in blend prices. In September, when the Mideast pooling standards returned to a higher level, the handler again became pooled on the Upper Midwest order.

In the Western order, two handlers received contract milk at times during the study period. Initially only one handler was pooling contract milk on that order; however, during the period from January through May 2001, no contract milk was pooled. Then from June 2001, through the end of the year, one handler continuously pooled contract milk on the Western order, but a second handler pooled contract milk only intermittently. During some months this handler pooled no contract milk and in other months pooled milk on both the Western and Upper Midwest orders. This handler, a non-pool plant, could pool milk only to the extent that the handler could associate milk with pool distributing plants regulated under the two Federal orders, and the handler chose not to do this in every month. For the first quarter of 2002, this handler pooled contract milk on the Western order each month.

In the peak months, there were 35 plants regulated under 7 of the 11 Federal milk marketing orders receiving contract milk. See Table 3-2. When a handler owns more than one plant in an order, unit pooling allows the receipts to be combined, and individual producer deliveries to separate plants cannot be determined. Nearly all of these plants were Class III cheese plants, with the exceptions of 2 primarily Class II plants.

The number of plants receiving contract milk under the Program represents a small proportion of the number of plants receiving pooled producer milk under Federal order regulation. On average during the study period, 25 plants received contract milk (Table 3-2). On average, 980 plants received pooled producer milk under the Federal order system each month, of which 691 on average were proprietary plants. Excluding the Class I distributing plants from this group leaves an average of 434 plants that manufactured most pooled milk received into dairy products. Thus, over the study period, the plants receiving Program contract milk represent 2.5 percent of all plants, 3.6 of proprietary plants, and 5.7 percent of proprietary manufacturing plants receiving pooled producer milk. Focusing on proprietary manufacturing plants, the percentage of plants receiving contract milk was at its lowest in October 2000 at 2.5 percent and at its highest in October 2001 at 7.8 percent. For the first quarter of 2002, this percentage was about 6 percent.

The Upper Midwest market, which had the most handlers offering forward contracts, also was the market with the greatest number of Program participating plants—11 plants receiving contract milk on a monthly average basis (Table 3-3). With respect to Program participating plants as a proportion of the proprietary manufacturing plants, the Northeast market ranked first at 15.2 percent, but this represents only 1.2 of its average 7.9 proprietary manufacturing plants.¹ The Upper Midwest market tied for second with the Central market (8.0 percent) with respect to contracting plants as a proportion of the proprietary manufacturing plants. The Central market had the second highest average number of plants receiving contract milk—7.2 plants on a monthly basis. The remaining markets averaged 2.4 plants or less receiving contract milk on a monthly basis.

Contract Milk Relative to Handler Receipts

To measure the impact of the Program on participating handlers receiving contract milk, the following indicators were constructed: (1) the volume of milk from producers eligible to participate in the Program, (2) contract volumes received, and (3) and eligible producer milk plus bulk milk receipts. Our discussion is limited to pooled milk volumes received by handlers for Federal orders where the handlers' plants received contract milk. This is only part of the milk volumes received by some participating handlers since they may have had plants that received milk pooled but none contracted in other Federal orders, that operated in State-regulated markets, or that operated in unregulated markets. Because some handlers jointly pool milk for multiple plants, we discuss milk volumes of handlers rather than plants, understanding that some handlers operate one or more plants receiving producer milk contracted under the Program.

The total volumes of milk received by the relevant plants of participating handlers are calculated as the receipts of milk from eligible producers plus the receipts of bulk milk

¹ Numbers referenced are not necessarily whole numbers because of changes for each order from month to month.

from other plants and cooperatives (Table 3-4).² Milk deliveries from eligible producers accounted for 87.5 percent on average over the study period of total milk deliveries to participating handlers.

Average monthly milk deliveries received by these handlers totaled 644.8 million pounds while deliveries of contract milk averaged 130 million pounds, or 20.2 percent during the study period. During 2001, contract milk averaged 167 million pounds monthly, dropping off to 87 million pounds during the first quarter of 2002. The single highest month for contracted milk receipts was September 2001 (205 million pounds), accounting for 25.1 percent of all milk receipts by these handlers. Since eligible producer milk was on average 87.5 percent of the total milk receipts for these handlers, contract milk as a percentage of eligible producer milk would run slightly higher. See Table 3-4 for additional milk delivery data and comparisons by month.

Handler Participation by Size

To determine whether the Program was used more extensively by a particular size handler, participating handlers were arrayed according to total monthly receipts of milk. Three size categories were established: (1) less than 25 million pounds per month; (2) 25 million to 50 million per month; and, (3) more than 50 million per month. (See Table 3-5.)

The Program was used monthly by at least 6 handlers throughout the study period. Some of the monthly variation between the categories is the result of handlers electing not to pool contracted milk every month and of changing pool volumes of handlers. In 2000, participation by handlers in each size category was evenly divided at a constant 2 plants per category each month. From January 2001 through February 2002, the category with the largest handlers, those with monthly receipts of at least 50 million pounds, varied between 4 to 6 handlers. Participation of the largest handlers reached a maximum of 7 in March 2002. The number of handlers in the medium-sized category reached a peak of 6 handlers in June and July 2001, stayed constant at 5 through February 2002, and declined to 3 in March 2002. The number of handlers in the smallest size category increased as 2001 progressed, reaching a maximum of 11 handlers in October 2001. The number of smaller handlers decreased toward the end of 2001 and varied between 6 and 7 handlers in the first quarter of 2002.

² Contracted pounds received are considered relative to pooled producer milk excluding that from cooperatives and all pooled producer milk plus bulk fluid milk product (FMP) receipts. Bulk FMP receipts include milk from cooperatives. The term “bulk FMP” is used to distinguish these milk receipts from receipts of packaged milk. Our calculations could be short of the actual total milk received by some handlers to the extent that plants receive packaged milk. Most milk contracted through the Program is milk received from eligible producers as defined in Chapter 1. These are mainly independent producers although some cooperative producers are also eligible because they are paid directly by a proprietary handler.

Reducing Price Volatility - Contract Milk by Size of Participating Handler

To determine the usefulness of the program to participating handlers as a hedge against milk price volatility and to measure of the ability of handlers to offer acceptable contracts to producers, the total volume of contract milk was compared against the total milk receipts of the participating handlers. The greater the percentage of milk under contract, the more insulated handlers should be from milk price volatility. This measure was reviewed according to the handler size categories previously delineated and is presented in Figure 3-1.

For participating handlers with less than 25 million pounds of eligible milk deliveries (Figure 3-1,a), 22 percent of the milk delivered to the handlers was under contract in the peak month of January 2001. The proportion of milk under contract declined gradually from February 2001 through March 2002. By the end of the period, participating handlers in this category had less than 5 percent of their total milk supply under contract.

In January 2001, handlers with greater than 25 million pounds but less than 50 million pounds of eligible milk receipts (Figure 3-1,b) on average had 37 percent of their total milk receipts under contract. This percentage dropped to about 21 percent on average for the remainder of the year, and for the first quarter of 2002, the percentage was about 15 percent.

The largest participating handlers had 25 percent of their milk under contract in the first half of 2001 (Figure 3-1,c). The proportion increased to an average of 29 percent in the second half of 2001. During the first quarter of 2002, the average percentage of contract milk dropped to 11 percent.

Table 3-1: Handlers Receiving Forward Contract Milk Under the Program^{1/}, by Order, by Month

Year and month	North-east	South-east	Central	Mid-east	Pacific North-west	Western	Upper Midwest	Six Orders 2/	Seven Orders 2/
2000									
Sept.	---	1	3	1	---	1	2	5	6
Oct.	---	1	3	1	---	1	2	5	6
Nov.	---	1	3	1	---	1	3	5	6
Dec.	---	1	3	1	---	1	3	5	6
2001									
Jan.	---	1	3	1	---	---	8	4	10
Feb.	---	1	3	1	---	---	10	4	12
Mar.	---	1	3	1	---	---	10	4	12
Apr.	1	1	3	2	---	---	11	6	14
May	2	1	4	2	---	---	12	7	16
June	2	1	4	3	---	2	11	10	19
July	2	1	4	3	---	1	12	9	19
Aug.	2	1	4	3	---	2	14	10	20
Sept.	2	1	4	2	1	2	14	10	21
Oct.	2	1	4	2	1	1	14	9	21
Nov.	2	1	4	2	1	2	13	10	20
Dec.	2	1	4	2	1	2	12	10	19
2002									
Jan.	2	---	4	2	1	1	11	9	17
Feb.	2	---	4	2	1	1	10	9	17
Mar.	2	---	4	2	1	1	10	9	16

1/ Program refers to the Dairy Forward Pricing Pilot Program.

2/ Seven Orders refers to the Federal Milk Marketing Orders with participation in the Program. These include the Central, Mid-east, Northeast, Pacific Northwest, Southeast, Upper Midwest, and Western orders. Six Orders refers to all of these orders except for the Upper Midwest. The number of handlers for Six Orders and Seven Orders is not simply the sum of the handlers for individual orders because some Program participating handlers had pooled milk in more than one order.

Table 3-2: Plants Receiving Producer Milk Pooled on Federal Orders: Total, Proprietary, and Program^{1/} Participating, by Month

Year and month	Plants receiving pooled producer milk				Participating plants as percentages of		
	Total	Proprietary 2/	Proprietary manufacturing 3/	Program participating	Total	Proprietary	Proprietary manufacturing
2000							
Sept.	929	659	399	11	1.2	1.7	2.8
Oct.	940	662	403	10	1.1	1.5	2.5
Nov.	908	628	369	11	1.2	1.8	3.0
Dec.	912	629	370	11	1.2	1.7	3.0
2001							
Jan.	946	661	404	17	1.8	2.6	4.2
Feb.	943	649	395	21	2.2	3.2	5.3
Mar.	953	667	401	23	2.4	3.4	5.7
Apr.	959	675	419	25	2.6	3.7	6.0
May	993	695	437	29	2.9	4.2	6.6
June	994	695	442	31	3.1	4.5	7.0
July	1020	721	469	31	3.0	4.3	6.6
Aug.	1032	732	474	35	3.4	4.8	7.4
Sept.	1002	716	458	35	3.5	4.9	7.6
Oct.	1002	712	451	35	3.5	4.9	7.8
Nov.	1020	729	469	35	3.4	4.8	7.5
Dec.	1047	754	495	33	3.2	4.4	6.7
2002							
Jan.	1012	725	469	28	2.8	3.9	6.0
Feb.	1002	709	460	27	2.7	3.8	5.9
Mar.	1002	715	464	26	2.6	3.6	5.6
19-month Average	980	691	434	25	2.5	3.6	5.7

1/ Program refers to the Dairy Forward Pricing Pilot Program.

2/ Excludes cooperative plants.

3/ Excludes fluid distributing plants.

Table 3-3: Plants Receiving Producer Milk Pooled on Federal Orders: Total, Proprietary, and Program^{1/} Participating, Monthly Average Number by Order

Order	Plants receiving pooled producer milk				Participating Plants as Percentages of		
	Total	Proprietary 2/	Proprietary manufacturing 3/	Program Participating 4/	Total	Proprietary	Proprietary manufacturing
Northeast	73.4	68.6	7.9	1.2	1.6	1.7	15.2
Appalachian	38.5	10.2	1.0	0.0	0.0	0.0	0.0
Florida	12.0	12.0	0.0	0.0	0.0	0.0	na
Southeast	104.9	101.1	69.4	1.7	1.6	1.7	2.4
Upper Midwest	266.6	157.1	137.7	11.0	4.1	7.0	8.0
Central	203.3	116.8	90.0	7.2	3.5	6.2	8.0
Mideast	142.7	115.1	70.6	2.4	1.7	2.1	3.4
Pac. Northwest	39.9	28.4	13.4	0.4	1.0	1.4	3.0
Southwest	51.0	41.7	17.5	0.0	0.0	0.0	0.0
AZ-Las Vegas	12.2	11.1	8.1	0.0	0.0	0.0	0.0
Western	35.3	29.2	18.5	1.1	3.1	3.8	5.9

Numbers displayed are not necessarily whole numbers because of changes for each order from month to month.

1/ Program refers to the Dairy Forward Pricing Pilot Program.

2/ Excludes cooperative plants.

3/ Excludes fluid distributing plants.

4/ Plants owned by handlers participating in the Program.

Table 3-4: Program^{1/} Milk Deliveries Received By Participating Handlers in the Seven Orders^{2/}, by Month

Year and month				Forward contract pounds as a percentage of		Number of handlers
	Eligible producer milk 3/	Eligible producer milk plus bulk milk receipts	Forward contract pounds received	Eligible producer milk 3/	Eligible producer milk plus bulk milk receipts	
	<i>1000 Pounds</i>			<i>Percent</i>		
2000						
Sept.	281,834	308,561	46,592	16.5	15.1	6
Oct.	293,958	324,792	51,288	17.4	15.8	6
Nov.	288,038	317,060	53,144	18.5	16.8	6
Dec.	304,553	326,441	54,456	17.9	16.7	6
2001						
Jan.	494,768	521,346	127,384	25.7	24.4	10
Feb.	519,563	544,010	126,135	24.3	23.2	12
Mar.	573,549	600,794	144,748	25.2	24.1	12
Apr.	639,413	707,219	176,841	27.7	25.0	14
May	629,797	714,335	142,175	22.6	19.9	16
June	666,158	745,645	151,545	22.7	20.3	19
July	639,145	718,832	169,016	26.4	23.5	19
Aug.	699,970	784,610	195,753	28.0	24.9	20
Sept.	690,305	816,835	205,016	29.7	25.1	21
Oct.	639,868	766,219	170,892	26.7	22.3	21
Nov.	699,089	826,297	195,199	27.9	23.6	20
Dec.	723,103	851,817	199,840	27.6	23.5	19
2001						
Jan.	688,422	802,175	86,514	12.6	10.8	17
Feb.	562,638	710,947	74,383	13.2	10.5	17
Mar.	683,768	862,408	100,636	14.7	11.7	16
19-month Average	564,102	644,755	130,082	23.1	20.2	14.6

1/ Program refers to the Dairy Forward Pricing Pilot Program.

2/ Reflects plant milk receipts of handlers pooling producer milk in the seven markets (Northeast, Southeast, Central, Mideast, Pacific Northwest, West, and Upper Midwest) where contracted milk is pooled under the Program.

3/ Excludes cooperative producers' milk, unless handler is responsible for producer payroll.

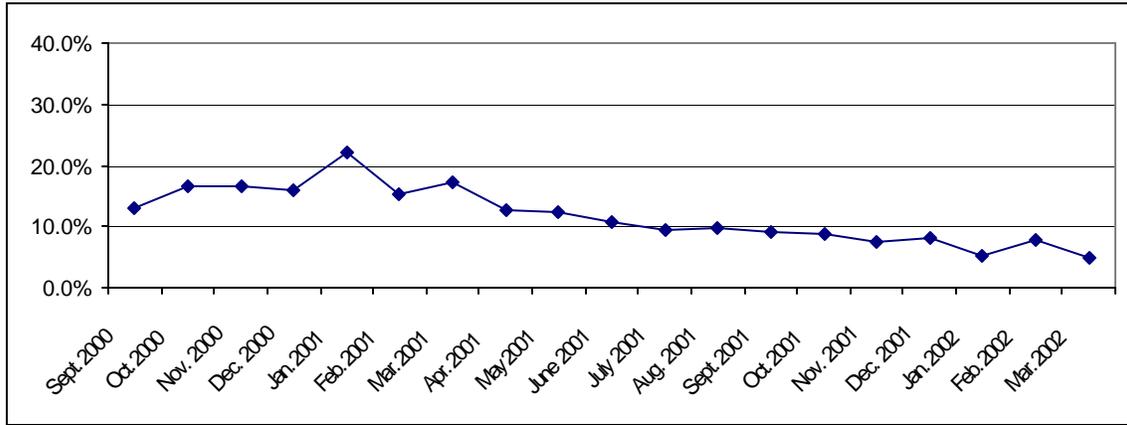
Table 3-5: Participating Handlers by Pooled Milk Receipt Category in the Seven Orders^{1/}

Year and month	Less than 25 million pounds		25 million to 50 million pounds		Greater than 50 million pounds		Total number of handlers
	Number of handlers	Percent of total	Number of handlers	Percent of total	Number of handlers	Percent of total	
2000							
Sept.	2	33.3	2	33.3	2	33.3	6
Oct.	2	33.3	2	33.3	2	33.3	6
Nov.	2	33.3	2	33.3	2	33.3	6
Dec.	2	33.3	2	33.3	2	33.3	6
2001							
Jan.	3	30.0	2	20.0	5	50.0	10
Feb.	3	25.0	5	41.7	4	33.3	12
Mar.	4	33.3	3	25.0	5	41.7	12
Apr.	5	35.7	5	35.7	4	28.6	14
May	6	37.5	5	31.3	5	31.3	16
June	9	47.4	6	31.6	4	21.1	19
July	9	47.4	6	31.6	4	21.1	19
Aug.	10	50.0	5	25.0	5	25.0	20
Sept.	10	47.6	5	23.8	6	28.6	21
Oct.	11	52.4	5	23.8	5	23.8	21
Nov.	9	45.0	5	25.0	6	30.0	20
Dec.	8	42.1	5	26.3	6	31.6	19
2002							
Jan.	6	35.3	5	29.4	6	35.3	17
Feb.	7	41.2	5	29.4	5	29.4	17
Mar.	6	37.5	3	18.8	7	43.8	16

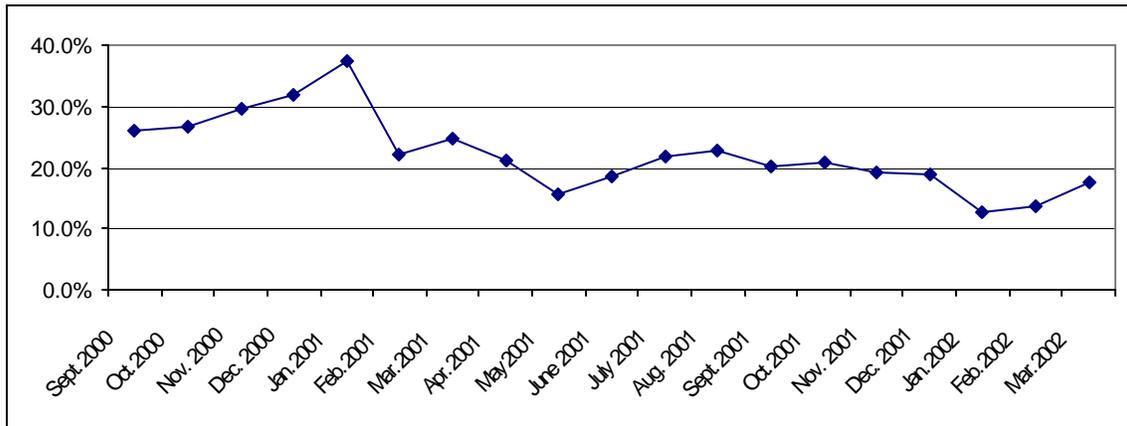
1/ Reflects the plant numbers in the seven markets (Northeast, Southeast, Central, Mideast, Pacific Northwest, West, and Upper Midwest) where handlers participated in the Program.

Figure 3-1: Contract Pounds as a Percent of Handlers' Total Monthly Milk Receipts^{1/}

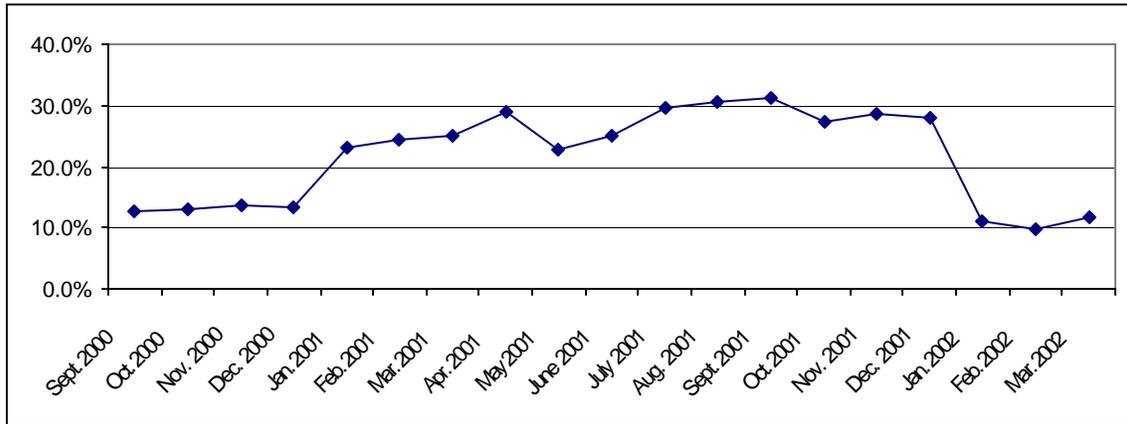
a. Participating Handlers With Less Than 25 Million Total Pounds Per Month



b. Participating Handlers with 25 Million to 50 Million Total Pounds Per Month



c. Participating Handlers With More Than 50 Million Total Pounds Per Month



1/ Total Monthly Milk Receipts are defined as eligible producer milk plus bulk fluid milk product (FMP) receipts received by plants of handlers that received contracted milk under the Program. The term "bulk FMP" is used to distinguish these receipts from receipts of packaged milk.

Plant Questionnaire Response

The plant questionnaire was designed to evaluate milk handlers' perceptions of the Program. Questions were asked as to why they used the Program, how it affected their businesses, and whether they would continue to offer forward contracts to their producers in the future. A copy of the questionnaire that was sent to 705 proprietary and cooperative plants is found in Appendix E.

The plant questionnaire generated usable responses from 248 plants, 21 which were Program participants and 227 which did not participate (Table 3-6). Of the 21 participating plants, 20 are proprietary plants and one is a cooperative-owned plant. Both participating and non-participating plants are well represented by the survey. Of the plants that were sent questionnaires, about two-thirds of all participating plants responded while about one-third of all non-participating plants responded.

Eighteen plants, or 85.7 percent, of the Program participants responding were predominantly Class III plants; and 2 plants, 9.5 percent, were predominantly Class I plants (Table 3-7). Class I participants can participate only to the extent that they also pool milk used in manufacturing classes. Of the non-participants responding, 139 plants (61.2 percent) were predominantly Class I plants and 40 plants (17.6 percent) were predominantly Class III plants. Only 3 predominantly Class IV plants responded, and these plants did not participate in the program.

Participating and Non-Participating Plant Characteristics

Participating plants tend to be larger, with 42.9 percent of participants pooling 30 million pounds or more per month, and 61.9 percent pooling at least 20 million pounds per month (Table 3-8). Comparatively, 31.3 percent of the non-participating plants that responded pooled less than 10 million pounds per month and 57.7 percent pooled less than 20 million pounds.

While participating plants tend to be larger than non-participating plants, it is not clear that participating handlers tend to be larger than non-participating handlers. A greater proportion of participating plants, 57.1 percent, reported to be single-plant firms (Table 3-9). This rate was somewhat higher than for non-participating plants, which reported being only 44.5 percent single plant firms. Of the participating plants belonging to multi-plant firms, 28.6 percent belonged to firms with 2-5 plants and 1 plant, which had a mix of Class I and manufactured class utilization, belonged to a firm with 6 to 50 plants (Table 3-10). Forty-seven non-participating plants reported that they belonged to firms with 6-50 plants. (It should be noted that many of these participating and non-participating plants that reported to be part of multi-plant firms could belong to the same firm.)

The Upper Midwest Federal milk marketing order regulated 12 (57.1 percent) of the reporting participating plants (Table 3-11). The Central order follows with three plants,

with two or less in the remaining orders. Wisconsin had the highest percentage of participating plants, 47.6 percent, with no more than 2 participating plants in any of the other States, which were mostly in the Midwest (Table 3-12).

Respondents' Program Opinions on Market Effects

One of the early concerns expressed by the industry was the possibility of the Program making it more difficult to attract milk for Class I purposes (Table 3-13). Of the two participating Class I plants that responded to the survey, one indicated that the Program had no effect on ability to attract Class I milk while the other plant indicated that the Program made it harder. Of the non-participating Class I plants, 51.1 percent indicated no effect while 7.9 percent indicated that the Program made it harder. A significant number, 38.8 percent, indicated that the question was not applicable. This response may mean that no competitors in their procurement area were offering contracts under the Program. Our survey did not cover Class I milk buyers who purchase milk solely from dairy cooperatives. Since the Program did not affect cooperatives' ability to forward contract with its members, any effect on their Class I milk customers would be indirect and small.

As to the Program's effect on a plant's ability to procure a milk supply for manufacturing, the responses were mixed (Table 3-14). Of the responding participating plants, 38.1 percent indicated that the Program made milk procurement for manufacturing easier for them. Two participating plants actually responded that the Program made it harder for them to attract milk for manufacturing. Ninety-one non-participating plants (40.1 percent) reported that the program did not affect their ability to attract a supply of milk for manufacturing purposes. Half of the non-participating plants responded that the question on ability to procure milk was "not applicable" to them. Of the 113 non-participating plants that answered as "not applicable," 69 are predominately Class I plants. Some of these may not view the question as applicable to them. Another explanation for many of "non-applicable" responses, whether the plants were Class I or manufacturing plants, may be that no competitors in their procurement area were offering contracts under the Program.

Participating plants were more likely than non-participants to use price protection tools for fuel, energy, and dairy product markets, as well as other pricing tools to offset milk price volatility (Table 3-15a). Milk price protection other than the Program was used by 61.9 percent of all participating plants. Such tools could include futures and options contracts for Class III and Class IV milk or cross hedging with some of the dairy product futures and options markets. Among non-participants, other milk price protection was reported by only 7.9 percent. The use of fuel and energy price protection tools was reported by 66.7 percent of all participating plants, but by only 29.1 percent of non-participating plants. Similarly, 66.7 percent of the participants reported using two or more other price protection tools compared to only 11 percent of the non-participants (Table 3-15b). Of the non-participants, 52 percent indicated using no price protection tool. Thus, the survey indicates that those who had used some type of price protection in

the past, were more likely to offer forward contracts under the Program and were more likely to use forward contracts in combination with other price protection tools.

Participating Plants – Contracting Activity

Participating plants mostly offered the same contract terms to all producers (90.5 percent; Table 3-16). Most participating plants accepted contracts in order of receipt (70.8 percent; Table 3-17a) while 4.8 percent accepted contracts from large producers first and 23.8 percent had other criteria for acceptance. Of those indicating other acceptance criteria, one respondent commented that contracts were limited to 100 percent of production, another stated that contracts had a 10,000 pound minimum, and another commented that contracts were accepted only in increments of 200,000 pounds. One plant indicated that contracts were offered, but no producers accepted contract offerings.

Plants used a variety of devices to cover contracts with producers (Table 3-18a). Futures and options contracts were used by 66.7 percent of the plants, 47.6 percent of the plants used long-term contracts to sell manufactured products, and 28.6 percent were to some extent self-protected. Thirteen plants (57.1 percent) used one device to cover the contracts, five plants (23.8 percent) used two, and three plants (14.3 percent) used three devices (Table 3-18b).

Although the Program is authorized only through December 31, 2004, participating plants were asked if they would continue to offer contracts in the future if the Program were reauthorized. Fifteen plants, 71.4 percent, answered this question affirmatively (Table 3-19). Five plants (23.8 percent) would do so only if necessary to compete for milk.

There was early concern expressed by the industry that the Program could result in the sale of more finished products under long-term contracts. This in turn could have an impact on the data available for the National Agricultural Statistical Service (NASS) dairy product price series. Long-term contract sales of finished products reportedly were increased by 7 plants, 33.4 percent of the participants (Table 3-20). One plant reported an increase of 50 percent or more, and 6 plants reported an increase of less than 25 percent. See Chapter 5 for additional discussion of this topic.

Non-Participating Plants—Considerations

A question was asked of non-participating plants to discover their reasons for not offering contracts under the Program. Of those responding, 120 plants, 52.9 percent, indicated that they did not offer contracts because most of their milk was used for Class I purposes (Table 3-21a). Two other reasons—“competition did not offer contracts” and “producers not interested”—were each reported by 22 plants. Sixteen plants reported that they offer contracts outside of the program subject to Federal order minimum prices. However, there is probably some misinterpretation of this selection. We found that 14 of these 16

plants are cooperative plants. This selection was probably chosen because the plants offer contracts outside of the program to their members that are not subject to Federal order minimum prices. Thirty-nine respondents indicated that there were other reasons for not participating. From this group, 17 respondents commented that they do not receive producer milk or that they receive their milk from cooperatives, but they gave no reasons for not considering forward contracts with cooperatives.

A single reason for not contracting under the Program was given by 78 percent of the non-participants (Table 3-21b). Two or more reasons were given by about 10 percent of the non-participants.

As an indication of perhaps limited growth in the Program, 6 non-participating plants out of 227, only 2.6 percent, reported that they would likely offer contracts in the future.

Responses to Questions Concerning Participants and Non-participants

Table 3-6: Did you offer contracts under the *Forward Contracting Pilot Program*?

Respondents	Number of responses	Percentage
Participants	21	8.5
Non-participants	227	91.5
Total Number of Respondents	248	100.0

Table 3-7: Of the milk you pool under Federal orders, what annual percentage falls into each class? Predominant class.

Predominant Class of Milk	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Class I	2	9.5	139	61.2
Class I & II	--	0.0	1	0.4
Class I & III	--	0.0	2	0.9
Class II	--	0.0	13	5.7
Class III	18	85.7	40	17.6
Class IV	--	0.0	3	1.3
Unknown	1	4.8	29	12.8
Total	21	100.0	227	100.0

Table 3-8: Total pounds milk pooled by plant per month during the past year.

Pounds pooled per month	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Less than 10 million	1	4.8	71	31.3
10 to 20 million	6	28.6	60	26.4
20 to 30 million	4	19.0	30	13.2
More than 30 million	9	42.9	50	22.0
Unknown	1	4.8	16	7.0
Total	21	100.0	227	100.0

Table 3-9: Plant is owned by single or multiple dairy plant firm.

Single or Multiple Plant Firm	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Single	12	57.1	101	44.5
Multiple	8	38.1	110	48.5
Unknown	1	4.8	16	7.0
Total	21	100.0	227	100.0

Table 3-10: Number of dairy plants owned per firm.

Number of Plants	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
1	12	57.1	101	44.5
2 to 5	6	28.6	27	11.9
6 to 50	1	4.8	47	20.7
Greater than 50	0	0.0	29	12.8
Unknown	2	9.5	23	10.1
Total	21	100.0	227	100.0

Table 3-11: Federal milk order the plant is generally regulated under.

Order	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Appalachian	--	0.0	12	5.3
Arizona-Las Vegas	--	0.0	3	1.3
Central	3	14.3	32	14.1
Florida	--	0.0	8	3.5
Mideast	2	9.5	30	13.2
Northeast	1	4.8	29	12.8
Pacific Northwest	1	4.8	18	7.9
Southeast	--	0.0	12	5.3
Southwest	--	0.0	19	8.4
Upper Midwest	12	57.1	54	23.8
Western	2	9.5	6	2.6
Not regulated under a Federal order	--	0.0	4	1.8
Total	21	100.0	227	100.0

Table 3-12: State the plant is located in.

State	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
IA	2	9.5	3	1.3
ID	2	9.5	2	0.9
IL	2	9.5	9	4.0
NY	1	4.8	9	4.0
OH	1	4.8	10	4.4
OR	1	4.8	12	5.3
SD	1	4.8	1	0.4
UT	1	4.8	5	2.2
WI	10	47.6	38	16.7
All other states	0	0.0	138	60.8
Total	21	100.0	227	100.0

Table 3-13: How has the *Forward Contracting Pilot Program* affected your ability to attract a supply of milk for Class I uses? Class I Plants.

Effect on ability to attract Class I milk	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Made it easier	0	0.0	0	0.0
Unchanged	1	50.0	71	51.1
Made it harder	1	50.0	11	7.9
Not applicable	0	0.0	54	38.8
Unknown	0	0.0	3	2.2
Total	2	100.0	139	100.0

Table 3-14: How has the *Forward Contracting Pilot Program* affected your ability to attract a supply of milk for manufacturing (Class II, Class III, Class IV) uses?

Effect on ability to attract milk for manufacturing uses	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Made it easier	8	38.1	1	0.4
Unchanged	8	38.1	91	40.1
Made it harder	2	9.5	11	4.8
Not applicable	2	9.5	113	49.8
Unknown	1	4.8	11	4.8
Total	21	100.0	227	100.0

Table 3-15a: Have you used forward contracts, futures, or options to protect against price changes? Selected categories.

Category	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
Fuel or energy	14	66.7	66	29.1
Labor	0	0.0	3	1.3
Dairy product markets	8	38.1	25	11.0
Milk other than through pilot program	13	61.9	18	7.9
Other, please specify	0	0.0	32	14.1
Did not make a selection	4	19.0	117	51.5

Table 3-15b: Have you used forward contracts, futures, or options to protect against price changes. Number of categories selected.

Number of categories selected	Participants	Percentage of Participants	Non-Participants	Percentage of Non-Participants
None	3	14.3	118	52.0
One	4	19.0	84	37.0
Two	11	52.4	15	6.6
Three	3	14.3	10	4.4
Total	21	100.0	227	100.0

Response to Questions Concerning Only Participants

Table 3-16: Did you offer the same contract terms to all producers?

Contract Terms	Number of	
	Participants	Percentage
Same for all producers	19	90.5
Not the same for all producers	2	9.5
Total	21	100.0

Table 3-17a: Criteria you used for accepting contracts offered. Selected criteria.

Criteria	Number of	
	Participants	Percentage
Accepted first from large producers	1	4.8
Accepted all contracts in order of receipt without regard to volume	17	70.8
Accepted for other reason	5	23.8
Did not make a selection	1	4.8

Percentages do not add to 100 because respondents could choose more than one answer.

One respondent indicated that contracts were offered but that no producers accepted the offer.

Table 3-17b: Criteria you used for accepting contracts offered under the *Forward Contracting Pilot Program* ? Number of selected criteria.

Number of selected criteria	Number of	
	Participants	Percentage
None	1	4.8
One	18	85.7
Two	2	9.5
Total	21	100.0

Table 3-18a: How did you cover accepted contracts under the *Forward Contracting Pilot Program*? Selected Criteria.

Criteria	Number of	
	Participants	Percentage
Long-term contract to sell manufactured Products	10	47.6
Used futures and options	14	66.7
Self-protected	6	28.6
Did not make a selection	2	9.5

Table 3-18b: How did you cover accepted contracts under the *Forward Contracting Pilot Program*? Number of selected criteria.

Number of selected criteria	Number of	
	Participants	Percentage
None	1	4.8
One	12	57.1
Two	5	23.8
Three	3	14.3
Total	21	100.0

Table 3-19: Would you continue to offer forward contracts if the program were continued beyond December 2004?

Program participant response	Number of Participants	Percentage
Yes	15	71.4
Only if necessary to meet competition	5	23.8
Don't know	1	4.8
Total	21	100.0

Table 3-20: Did you sell more of your finished product under long-term contracts with buyers because you were able to forward contract a milk supply?

Effect on sales of finished products	Number of Participants	Percentage
None	14	66.7
Less than 25 percent more	6	28.6
From 25 to 50 percent more	0	0.0
50 percent or more	1	4.8
Total	21	100.0

Responses to Questions Concerning Only Non-Participants

Table 3-21a: If you did not offer forward contracts under the *Forward Contracting Pilot Program* to your producers, please mark all the following that apply. Selected reasons.

Reason for not participating	Number of Non-Participants	Percentage of non-Participants
Competition did not offer forward contracts.	22	9.7
Producers were not interested in forward contracting.	22	9.7
Most milk is used for Class I purposes and is ineligible.	120	52.9
Plant offers forward contracts outside of program subject to Federal Order minimum prices. 1/	16	7.0
Other reason.	39	17.2
Plant likely will offer in near future.	6	2.6
Did not make a selection.	28	12.3

Percentages do not add to 100 because respondents could choose more than one answer.

1/ Includes fourteen cooperative responses, who likely interpreted the category to include the milk they pool on Federal orders, for which minimum prices are drawn from the pool, but for which cooperative members' revenues may be re-blended and forward contracted outside of the Pilot Program.

Table 3-21b: If you did not offer forward contracts under the *Forward Contracting Pilot Program* to your producers, please mark all the following that apply. Number of selected reasons.

Number of Selections	Number of Non-Participants	Percent
None	29	12.8
One	177	78.0
Two	15	6.6
Three	6	2.6
Total	227	100.0

Cooperative Questionnaire Response

The cooperative survey was initially designed to study characteristics and opinions of cooperatives participating in the Program as milk sellers. Since only one cooperative participated in the Program as a milk seller during the study period, the survey is not useful for this purpose. However, the survey does allow us to compare cooperatives offering members forward contracts to cooperatives not offering forward contracts. We are also able to gain some information concerning the effect of the Program on cooperatives offering forward contracts to members.

Of 84 respondents to the cooperative survey, 19 respondents (22.6 percent) indicated that they offered forward contracts to their members (Table 3-22). Only one (5.3 percent) of the contract-offering cooperatives reported total milk pounds handled of more than 250 million per month (Table 3-23). This contrasts with 13.8 percent of the non-contract-offering group handling 250 million pounds of milk per month. While the largest percentage of contract-offering cooperatives handles 10 to 50 million pounds per month (47.4 percent), the largest percentage of non-contracting-offering cooperatives handles less than 10 million pounds per month (30.8 percent), with the 10 to 50 million pound category coming in a very close second (29.2 percent).

For both contract-offering and non-contract-offering cooperatives, Class III milk tends to be the dominant class of milk, with about 42 percent from both groups in this category (Table 3-24). Class I is ranked second for both groups, with 21.1 percent for contract-offering cooperatives and 33.8 percent for non-contract-offering cooperatives. It is interesting that 2 contract-offering cooperatives indicated Class IV as a predominant class of milk while there were no non-contract-offering cooperatives in this category.

There is a notable contrast between the two groups with respect to Federal marketing orders (Table 3-25). Contract-offering cooperatives pooled most of their milk in the Upper Midwest Federal Milk Marketing Order (57.7 percent) while the non-contracting cooperatives pooled most of their milk in the Northeast Federal Milk Marketing Order (64.7 percent). Second place for the contract-offering cooperatives is the Northeast (15.8 percent), while second place for the non-contract-offering cooperatives is the Upper Midwest (8.0 percent).

The survey indicates that contract-offering cooperatives are more likely than non-contract-offering cooperatives to use tools such as forward contracts, futures contracts, or options to reduce price volatility. This is the case for feed, fuel or energy, dairy product markets, and milk (Table 3-26a). Of the cooperatives offering forward contracts to members, 42.1 percent reported use of at least one type of tool to reduce price risk (Table 3-26b). For the cooperatives not offering forward contracts, only 10.8 percent reported use of at least one type of price reduction tool. It is interesting that only 3 of the 19 contract-offering cooperatives indicated that they used price protection methods for milk. This seems contradictory to their responses indicating that they had offered forward contracts to members. One possible explanation is that some contract-offering respondents may not think of their forward contracts primarily as price risk reduction

instruments for the cooperative. Perhaps some cooperatives perceive forward contracts as tools to acquire, keep, and satisfy members rather than as tools to reduce price volatility for the cooperative.

Cooperatives that had offered contracts to their members were questioned concerning the effect of the Program on their contract offerings. The majority, 13 respondents (68.4 percent), indicated that the program had little or no effect (Table 3-27). Two reported that the Program made offering contracts necessary in order to meet competition, 1 indicated that the Program made offering contracts easier, and 4 did not make a selection.

Cooperative Questionnaire Responses

Table 3-22: Has the cooperative offered forward contracts to members?

Contracts offered to cooperative members	Number of responses	
	Number of responses	Percentage
Yes	19	22.6
No	65	77.4
Totals	84	100.0

Table 3-23: Total pounds of milk handled per month during the past year:

Pounds handled per month	Offered Member Contracts		Did not offer member contracts	
	Number	Percentage	Number	Percentage
Less than 10 million	6	31.6	20	30.8
10 to 50 million	9	47.4	19	29.2
50 to 250 million	3	15.8	15	23.1
More than 250 million	1	5.3	9	13.8
Unknown 1/	0	0.0	2	3.1
Totals	19	100.0	65	100.0

1/ Unknown indicates non-response to the survey question.

**Table 3-24: Of the milk you pool under Federal orders, what percentage falls into each class?
Predominant class of milk determined from response to this question.**

Predominant class of milk	Offered Member Contracts		Did not offer member contracts	
	Number	Percentage	Number	Percentage
Class I	4	21.1	22	33.8
Class II	1	5.3	4	6.2
Class II & III 1/	1	5.3	0	0.0
Class III	8	42.1	27	41.5
Class IV	2	10.5	0	0.0
Unknown 2/	3	15.8	12	18.5
Totals	19	100.0	65	100.0

1/ One respondent indicated equal predominance of Class II and Class III.

2/ Unknown indicates non-response to the survey question.

Table 3-25: Of the milk you pool under Federal orders, what annual percentage is pooled in each order? Please enter percentages adding to 100%.

Order	Average Percentage Pooled Per Order	
	Offered Member Contract	Did not offer member contracts
Northeast	15.8	64.7
Mideast	0.8	5.3
Appalachian	0.0	2.5
Northwest	9.3	4.9
Florida	0.0	1.5
Southwest	2.7	3.4
Southeast	2.7	2.2
AZ-Las Vegas	0.0	3.3
Upper Midwest	57.7	8.0
Western	1.4	1.7
Central	9.6	2.5
Totals	100.0	100.0

Table 3-26a: Has the cooperative used forward contracts, futures market contracts, or options to protect itself against price changes in: (Select all that apply.)

Other Risk Management Used	Offered Member Contracts		Did not offer member contracts	
	Number	Percentage	Number	Percentage
Feed	4	21.1	0	0.0
Fuel or energy	5	26.3	6	9.2
Dairy product markets	2	10.5	3	4.6
Milk other than through pilot program	3	15.8	2	3.1
Did not make a selection	11	57.9	58	89.2

Percentages do not add to 100 because respondents could choose more than one answer.

Table 3-26b: Number of Selections: Has the cooperative used forward contracts, futures market contracts, or options to protect itself against price changes?

Number of Selections	Offered Member Contracts		Did not offer member contracts	
	Number	Percentage	Number	Percentage
None	11	57.9	58	89.2
One	3	15.8	4	6.2
Two	4	21.1	2	3.1
Three	1	5.3	1	1.5
Totals	19	100.0	65	100.0

Table 3-27: If the cooperative has offered forward contracts to its members, has the Forward Contracting Pilot Program: (Select all that apply)

Effect On Offerings to Coop Members	Number of Responses	Percentage
Made it easier	1	5.3
Made it necessary in order to meet competition	2	10.5
Had little or no effect	13	68.4
Did not make a selection	4	21.1

Percentages do not add to 100 because respondents could choose more than one answer.

Chapter 4

Prices for Forward Contract Milk Marketed Under the Program

The economic function performed by Dairy Forward Pricing Pilot Program (Program) is the reduction in the uncertainty of prices paid and received for milk through forward contracting. In this study, prices received by producers for forward contracted milk are compared to the prices that would have been received for the milk had it not been contracted. The analysis includes a comparison of average prices by signing quarter to delivery quarter, and a comparison of forward contract average prices to Federal milk order average minimum prices (at producers' tests) and futures market average prices for milk.

The great majority of handlers participating in the Program are cheese makers, and their contract prices are usually related to Federal order Class III prices. In most contracts, prices are either expressed in terms of the Class III milk components used in Federal orders or just as a price for Class III milk. Contracts frequently provide that the handler will pay a producer price differential (PPD) and customary premiums in addition to the contract price for Class III milk and/or components¹. The PPD paid by the handler may be different from the Federal order PPD, and customary payments are often described as the normal quality premiums paid, but are not detailed in the contract.

Price comparisons in this chapter are the differences between the average pay prices for producers' milk under contract (the contract price) and for such milk if not under contract (the non-contract price.) The prices are compared for the same plant locations, are for milk of the same component tests, and are based on the gross pay prices for milk before deductions for hauling, promotion, and normal marketing charges. We assume that premiums and PPDs paid by handlers are the same for contract and non-contract milk. The average contract and non-contract prices discussed and reported in the tables are average prices received, weighted by pounds of contract milk. For a detailed discussion of how prices were computed, see Appendix D.

¹ The producer price differential (PPD) is part of the minimum blend price in Federal orders with component pricing plans. The PPD reflects the producer's portion of the Class I and Class II differentials; the Class IV price relative to the Class III price; location adjustments; differences in the pool values of protein, butterfat, and other solids compared to their Class III values; and other factors. The producer's minimum Federal order milk price is the value of components at minimum prices—or the Class III price at producers milk test—plus the PPD. In the orders with skim milk and butterfat pricing plans, a Uniform price is calculated as a weighted average or pool value of skim milk and butterfat priced at minimum class prices. A value analogous to the PPD can be calculated as the difference between the Uniform price and the Class III price. For more pricing detail see **Code of Federal Regulations**, Title 7, Parts 1000 to 1199; and Dairy Programs' Price Description at http://www.ams.usda.gov/dyfmoms/mib/fedordprc_dscrp.htm. Handlers may pay PPDs that are identical to the Federal order PPDs, or may pay different PPDs calculated with their own formulas. The Federal order assures that producers receive at least the Federal order minimum blend price, and is otherwise indifferent to the payment systems used by handlers and producers. However, prices for milk contracted under the Program may fall below the Federal order minimum blend price.

We make comparisons between average contract prices and Federal milk order average minimum blend prices (at producers' tests) and find that there are instances of contract prices falling below the Federal order minimum. We also compare differences between average contract prices and average Class III futures prices on the Chicago Mercantile Exchange (CME). The use of the futures market is an alternative to the Program for many dairy farmers. Finally, to address concerns of some industry participants, we look at any impact that the Program may have had on CME cash markets for dairy products.

Forward Contracts and Price Variability

Over time, our expectation is that prices received by producers for contract milk will average about the same as prices for milk not under contract. It is clear that forward contracting is of value to some producers and handlers because it affords them a reduction in price variation or price risk. Economic theory holds that risk-averse producers will produce the same amount of commodity at a lower, stable price as they would at a higher variable price. There also are benefits to handlers from stable prices. However at this time, we cannot determine if either party to a contract for milk tries to negotiate a premium or discount related to risk aversion. Instead, we believe that each party uses the best information available at the time the contract was entered into with the expectation that contract prices will be reasonably close to current price projections.

An overall measure of the Program's effect on producer milk prices is captured by the differences between average contract and non-contract prices, and the differences in variability of these prices. From September 2000 through March 2002, contracts were signed under the Program for milk that was pooled on 7 of the 11 Federal milk marketing orders. Orders pooling contract milk were the Upper Midwest, Pacific Northwest, Western, Central, Mideast, Southeast, and Northeast (Seven Orders). For the Seven Orders, the 19-month average contract price was \$14.02, \$0.49 less than the non-contract price (Table 4-1). (Monthly price tables are provided in Appendix F.) The standard deviation, which is a measure of spread in prices around the average, is \$1.80 per hundredweight for the non-contract price and \$0.51 for the contract milk. The price range for non-contract milk over the period is \$5.71 per hundredweight, but for milk under contract is only \$1.63. Thus, the program reduced the volatility in prices from \$5.71 to \$1.63 per hundredweight, but the average price was \$0.49 per hundredweight or about 3.4 percent lower.

The effect of contracts stabilizing milk prices is presented graphically in Figure 4-1. From September 2000 through February 2001, monthly average contract prices exceeded the non-contract prices. Non-contract prices increased dramatically from April to September 2001 and exceed contract prices before again falling below contract prices in November 2001. The gap between contract and non-contract prices continued to widen in the first-quarter of 2002. It is likely that contract prices remained above non-contract prices during the second and third quarters of 2002, as milk prices continued to be pressured downward by increased milk supplies. Figure 4-2 shows the differences

between contract prices and non-contract prices and between contract prices and Federal order minimum prices for the 19-month period.

To add additional perspective, contract prices were compared against prices paid in recent years for Grade A milk. This Grade A milk price is comparable to the prices for contract and non-contract milk in that the prices are at producer tests and are f.o.b. plant prices, and include quality, quantity, and other premiums. Average annual fluid grade milk prices, at test, averaged \$14.17 per hundredweight for the period 1997 through 2001, ranging between \$12.44 in 2000, and \$15.50 in 1998. Over the 19-month study period, the price for contract milk averaged \$14.02. We expect that as the Program continues, average contract prices may continue to be near recent historical averages. The price for milk contracted in the third quarter of 2000 averaged \$14.01 per hundredweight, which was quite close to the 1997-2000 average fluid grade price of \$13.94.

Fluid grade milk price: U.S. annual average, at test

1997	1998	1999	2000	2001	Average
\$13.40	\$15.50	\$14.42	\$12.44	\$15.09	\$14.17

Source: USDA, National Agricultural Statistics Service

Upper Midwest and Six Orders

The Upper Midwest order had the greatest Program participation in terms of both producers and handlers. Participation in the other six Federal orders with contract milk (Six Orders) was such that to avoid disclosure of proprietary information these markets are combined in the following analysis. Also, because of restricted data, the months of September and October 2000 are excluded from the following analysis. Thus, the following relates to the 17-month period November 2000 through March 2002 rather than the 19-month period used in prior chapters of this report.

To compare the Upper Midwest and the Six Orders with the Seven Orders, 17-month statistics are also provided for the Seven Orders in Table 4-1. For the Seven Orders, reducing the study period by two months has the effect of increasing the average non-contract milk price from \$14.51 (19 months) to \$14.68 per hundredweight. The 19-month average contract milk price is reduced by \$0.02 per hundredweight to \$14.00 per hundredweight. The average difference between the contract and non-contract prices for the 17-month period is \$0.67 per hundredweight compared to \$0.49 for the 19-month period, with the average non-contract price being higher in both periods. The standard deviations increase modestly by going to the 17-month period, but the extreme price points and the price ranges are unchanged.

Average contract prices compared to non-contract prices averaged \$0.66 per hundredweight less in the Upper Midwest and \$0.65 less in the Six Orders.² The Upper

² It would be expected that since the Seven Order average contract and non-contract prices lie between those prices of the Six Orders and the Upper Midwest, the Seven Order average price difference would lie

Midwest and Six Orders diverge when it comes to variance reduction. The Upper Midwest had less price variability for the non-contract milk than the Six Orders, a standard deviation of \$1.67 as opposed \$1.98, respectively. In comparison, the price variability for contract milk was less in the Six Orders with a standard deviation of \$0.42 per hundredweight than in the Upper Midwest with a standard deviation of \$0.82.

Prices in the Upper Midwest for non-contract milk ranged from a high of \$17.27 to a low of \$11.77 per hundredweight, a difference of \$5.50. For contract milk, prices ranged from \$15.20 to \$12.58 per hundredweight, a difference of only \$2.63. The maximum non-contract price exceeded the maximum contract price by \$2.07 per hundredweight. The minimum contract price exceeded the minimum non-contract price by \$0.81 per hundredweight.

In the Six Orders, average prices for non-contract milk ranged from a high of \$18.46 to a low of \$12.31 per hundredweight, a difference of \$6.15. For contract milk, prices ranged from \$15.31 to \$13.77 per hundredweight, a difference of only \$1.54. The maximum non-contract price exceeded the maximum contract price by \$3.16 per hundredweight. The minimum contract price exceeded the minimum non-contract price by \$1.46 per hundredweight.

Forward Contract Prices by Signing and Delivery Quarter

There appear to be two notable factors that affected the difference between contract and non-contract prices. Contract prices were more likely than not to be consistent with delivery-date market conditions when the time span between the signing and delivery dates was shorter. Forecast prices influence contract prices, and forecasts are influenced by market conditions at the time of forecast.

Contract Milk Under Seven Orders

Quarterly average contract milk prices by signing and delivery quarter are found in Table 4-2a and illustrated in Figure 4-3. Contracts were signed in one quarter for milk to be delivered in succeeding quarters, possibly more than one year later. Contracts signed in third quarter 2000 had prices averaging closest to the \$14.02 per hundredweight, the 19-month average contract price. Contracts signed in first quarter 2001 reflected the outlook

between the Six Orders and Upper Midwest average price differences. However, the Upper Midwest contracted volume decline in 2002 was significantly greater than that in the Six Orders, shifting the weighting to the Six Orders in calculating the Seven Orders average prices. In addition, in most of 2001 contract prices were less than non-contract prices, but contract prices exceeded non-contract prices in first-quarter 2002. This combination of shifts caused the improbable ordering of differences in the average contract and non-contract prices. However, the ordering of price differences is logical for every individual month, for the Nov. 2000 through 2001 averages, and for the first-quarter 2002 averages.

for lower prices in 2001. As market prices began to climb in 2001, contract prices at signing also rose. Prices provided by contracts signed in second quarter 2001 ranged from \$14.15 to \$14.96 per hundredweight, and prices in contracts signed in third quarter 2001 reached \$16.00 per hundredweight. By fourth quarter 2001, signing prices had fallen back down to reflect the expected drop in 2002 market prices. Contracts signed in first quarter 2002 for delivery in that quarter averaged \$13.66 per hundredweight.

For comparison purposes, average non-contract prices applicable for the signing and delivery quarters are shown in Table 4-2b. Prices differ by delivery quarter for contracts entered into in the same quarter because of the differing number of plants, orders and volumes of non-contract milk that was associated with contracting plants. Average Federal order minimum prices for the same quarters are presented in Table 4-2c. Calculating market and Federal order minimum prices in this manner allows us to examine differences in comparable prices.

The average differences between contract and non-contract prices according to signing and delivery quarter are shown in Table 4-2d and Figure 4-4. Clearly shown are the effects of market expectations in the signing quarter on differences between contract and non-contract prices. As signing quarters progressed from 2000 through the first quarter of 2001, contract prices for future delivery periods underestimated ultimate market prices to a greater degree. By the second quarter of 2001, a momentum had been established toward higher market prices. Although contract prices were less than non-contract prices in the second and third delivery quarters of 2001 for all signing quarters, differences for contracts signed in the second and third quarters were less than differences for contracts signed in previous quarters. As non-contract prices fell in the fourth quarter of 2001, differences between contract and non-contract prices moved in a positive direction. Prices for contracts signed in the second half of 2001 for delivery in fourth quarter 2001 were higher than non-contract prices. For the first delivery quarter of 2002, contract prices were higher than non-contract prices for all signing quarters.

The amounts by which non-contract milk prices exceeded contract milk prices were largest in the third quarter of 2001. The greatest gap, \$4.33 per hundredweight, was for milk contracted in the fourth quarter of 2000 for delivery in the third quarter of 2001. Contract milk prices in excess of non-contract prices were greatest, \$1.97 per hundredweight, for milk contracted in the third quarter of 2000 for delivery in the fourth quarter of 2000.

Contract milk prices were less than the Federal milk order minimum prices in the second and third quarters of 2001. Contract prices for all other signing and delivery quarters, with the exception of contracts signed in the first quarter of 2001 for delivery in the fourth quarter of 2001, received more than the comparable Federal order minimum price.

Upper Midwest and Six Orders

Tables 4-3a through 4-3e provide quarterly average prices and comparisons for milk pooled under the Upper Midwest Order. Tables 4-4a through 4-4e provide the same information for the Six Orders. Differences in contract and non-contract prices follow similar patterns in the two sets of tables. For example, the Upper Midwest average price for milk contracted in the first quarter of 2001, for delivery in the fourth quarter of 2001, was \$0.97 per hundredweight less than the comparable average non-contract price. The same price comparison for the Six Orders is a negative \$1.03 per hundredweight. The general patterns for the Upper Midwest and Six Orders are consistent for all signing and delivery quarters. However, the magnitudes of the price differences vary between the two groups. For the Six Orders, the greatest amount by which the average non-contract price exceeded the contract price, \$4.75 per hundredweight, occurred for milk contracted in the fourth quarter of 2000 for delivery in the third quarter of 2001. The greatest amount by which average contract milk prices exceeded the non-contract average was \$1.66 per hundredweight and occurred for milk contracted in the third quarter of 2001 for delivery in the first quarter of 2002.

Gross Values of Contract Deliveries

As noted earlier, the number of producers participating and the volumes of milk marketed under the Program have varied. Contract volumes were the greatest when non-contract prices exceeded contract prices by the greatest amount. Thus the impact on farm cash receipts from milk marketing by contract producers was greater than that implied by just the difference in average prices over the study period. See Figure 4-5.

In the Seven Orders, from September 2000 through March 2002, contract producers marketed a total of 3.6 billion pounds of milk, of which 2.5 billion pounds (69 percent) were contract milk. Gross cash receipts for all milk marketed by contract producers were \$514 million before deductions for hauling, promotion, and marketing. See Table 4-5. Contract milk grossed \$343 million. Had the contract milk been marketed without contract, the gross cash receipts for that milk would have been an estimated \$371 million, \$28.2 million higher. Thus, gross cash receipts for all milk marketed by contract producers as a group were reduced by an estimated 5.2 percent during the study period.

Information relative to similar gross cash receipts for the Upper Midwest Federal milk order and the Six Orders combined are in Appendix G.

Forward Contract Prices and Futures Prices

As an alternative or a supplement to participation in the Program, producers could have sold milk futures contracts on the Chicago Mercantile Exchange (CME).³ Of course,

³ Milk and dairy product trading on the CME includes Class III and Class IV milk futures, butter futures, options on futures contracts, and spot markets for butter, cheese, and nonfat dry milk.

smaller producers may not have this alternative since monthly futures contracts are for 200,000 pounds each. For some contracts, the handler acts as a middleman between the producer and the futures market. Some handlers sell futures in order to offset their risk contract positions. For these reasons, it is useful to compare results from the contracting with the results from the futures market. Since most contract milk has been for Class III purposes, the likely alternative to compare against was the CME Class III futures prices.

As an alternative from the producer's prospective, we estimated how producers would have fared if, instead of forward contracting, they had purchased futures contracts. We assumed that the futures contracts were purchased in the same months that forward contracts were signed and that delivery period and amounts were the same as under forward contracts. Our comparison considers neither brokerage fees nor any margin calls that might have occurred during the futures' contract period.

A forward contracting producer chooses to give up the non-contract price and to accept instead the contract price for a portion of his milk. As an alternative, a producer could have sold futures contracts on the CME for future delivery of the same portion of his milk, accepted the non-contract milk price at the time of delivery, and added his gains or losses from the futures market to the price received for his milk, to arrive at his net milk price. Average Class III futures prices-- by forward contract signing and delivery quarter and weighted by monthly pounds forward contracted under the Program-- are shown in Table 4-6a. The corresponding average Federal order Class III prices in Table 4-6b similarly reflect the monthly pounds contracted over the quarter. The quarterly average prices in the delivery quarters are different to the extent that the monthly delivery proportions vary by signing quarter. The differences between average Class III futures and Federal order Class III prices are calculated in Table 4-6c. It is this difference that would be added to the producers' non-contracted milk price had they used the Class III futures markets to protect their milk price.

A comparison of the use of CME futures contracts to Program contracts is shown in Table 4-7. Table 4-7a shows the quarterly prices received for contract milk under the Program. Table 4-7b shows the quarterly non-contract prices to which has been added any gains or losses from the futures market and calculated in Table 4-6. Table 4-7c shows the amount by which average quarterly prices under Program contracts would have exceeded net prices received by producers who used the futures market to stabilize milk prices.

Producers were better off, on average, with contract prices than with futures in 17 of the 25 signing-delivery combinations. Producers would have been better off signing forward contracts in the first three delivery quarters and the last delivery quarter of the study period. In the second through fourth quarters of 2001, how a producer fared depended on when the forward contract was signed and when the futures contract was sold.

Addendum - Price Information After Study Period

As the data collected for the 19-month study period was being analyzed and this report was being written, it became obvious that additional information provided by contracts for delivery in 2002 could be reshaping the picture. Given the precipitous decline in 2002 milk prices from 2001 levels, it appears that producers who signed contracts in 2002 may have protected themselves by contracting at prices that will likely be attractive in 2002.

Although no actual data on deliveries made or prices received were available beyond March 2002, limited contract information was available with price levels for deliveries to be made in April through August 2002. Table 4-8 shows the number of producers for which we had contract information each month. From this information, we were able to define two groups for which the contracts provided both price and volume information. For one group, prices were specified as Class III milk prices and for the other, milk component prices. About 80 of the available contracts did not specify pounds of milk or components and therefore could not be used in this estimation.

Contract prices were converted, if necessary, into prices for Class III milk containing 3.5 percent butterfat. We were then able to compare these base contract prices (without premiums or PPDs) with announced Federal order minimum Class III prices. For contracts quoted on a Class III milk price basis, the average quoted price exceeded the announced Federal order Class III price by \$2.30 per hundredweight during this 5-month period. Those contracts written on a milk component price basis exceeded the announced Federal order Class III price by an average of \$2.41 per hundredweight.

Thus, the additional limited available information indicates that milk delivered under contracts in 2002 received a higher average price than non-contracted milk. This illustrates the potential value of market participants following a consistent marketing strategy. Had the producers who dropped out of the program after 2001 stayed in, the negative differences on contract and non-contract prices may have been balanced out and their revenues stabilized.

Dairy Forward Pricing Pilot Program Impact on Chicago Mercantile Exchange Cash Dairy Product Markets

There were concerns expressed by several in the industry that the Dairy Forward Pricing Pilot Program (Program) could result in less volumes of dairy products traded on the Chicago Mercantile Exchange (CME) cash markets. The State of California uses CME cash market prices to price milk under their marketing order program, and it is generally believed that a large share of the cheese and butter sold wholesale in the United States is priced based on the CME cash market prices. Federal milk orders use weekly wholesale prices of butter and cheese collected by the National Agricultural Statistics Service

(NASS) to establish minimum class prices. NASS wholesale product prices and the CME cash market prices are highly correlated.

Historically, dairy product cash markets occasionally have been referred to as “thin” markets. Trades on the CME occur primarily when buyers and/or sellers believe that the current market price level does not adequately reflect the supply and demand conditions for the product. Experience has shown that any firm attempting to buy or sell a dairy product at a price level which differs from the general industry consensus price must be prepared to buy or sell large quantities of the product in order to raise or lower the market price. The Commodity Futures Trading Commission has stated in a letter to USDA as recently as December 2001, that “although there are relatively small numbers of actual transactions, the spot butter and cheese call sessions are closely monitored by a number of commercial traders in various segments of the dairy industry who stand ready to participate if conditions warrant it.”

Specifically the questions we looked at were, “If by contracting a milk supply, will manufacturers of butter and cheese have a better handler on their input costs, will they sell more of their finished product under long-term contracts with their customers rather than on the spot market? If there are more long-term contracts for butter and cheese, will there be less activity on the CME cash markets for these products?”

Question number 15 on our plant questionnaire asked if handlers sold more of their products under long-term contracts because they were able to lock-in a price of milk, the major input cost. Of the 21 responding, 16 indicated that they sold no additional product under long-term contracts, 5 cheese plants indicated that sales under long-term contracts had increased less than 25 percent, and 1 cheese plant indicated that such sales had increased by 50 percent or more. Although these responses suggest additional interest in committing products to long-term sales contracts, data are not available to estimate volume increases or the volumes of cheese and butter currently sold under long-term contracts by all contracting and non-contracting manufacturers. Even if those cheese plants who indicated that they had increased the volume of product sold under long-term contracts had instead sold all of the cheese that they produced from contracted milk under long-term contracts, the additional contracted volume would amount to less than one percent of monthly American cheese production.

Next, we reviewed the average monthly volume of total activity (includes sales, bids, and offers) and sales activity on the CME cheese and butter cash markets from January 1998 to August 2000 (before the program implementation), and from September 2000 to March 2002 (since implementation). To reduce the short-term variation in activity on the CME, the data were converted into three-month moving averages. (See Figures 4-6 and 4-7.)

The average monthly volume of total activity on the combined CME block and barrel cheese markets after Program implementation was almost 60 cars, or 27 percent, less than activity prior to the Program. A similar comparison of monthly sales activity of blocks and barrels showed a decrease of almost 35 cars, or 33 percent. The average monthly

volume of total activity on the CME butter market has been down more than 35 cars (18 percent) following implementation of the Program while the monthly average of total sales decreased by 7 cars, or 10 percent.

Market factors other than forward contracting of milk are more likely responsible for the reduced CME activity. It appears that there is less activity on the CME when the price remains stable. For example, a sustained strong growth in milk supply kept cheese prices near the price support level in early 2000, which likely limited transactions on the CME. More transactions took place in August, September, and October as prices moved to levels that the market felt more adequately reflected supply and demand conditions. In contrast, during the first nine months of 2001, cheese prices on the CME increased steadily due to a decrease in milk production. During the period the market did not resist the price increase, and thus it took fewer transactions to raise the price and keep it there. Although the questionnaires provided some indication that some contracting handlers had increased the volume of butter and cheese they sold under long-term contacts, it is unclear whether the decrease in activity on the CME cash markets has been a result of the Program.

Table 4-1: Contract Milk and Price Information^{1/}, Two Study Periods^{2/}—Seven Orders^{3/}, Upper Midwest, and Six Orders^{3/}

Study period summary statistics for Federal order groups	Contract milk delivered and pooled <i>1000s lbs.</i>	Prices at test			Price differences	
		Contract price	Non-contract price	Federal order minimum	Contract minus non-contract	Contract minus F. O. minimum
		<i>\$/cwt.</i>			<i>\$/cwt.</i>	
Seven Orders – 19 months (Sept. 2000 – March 2002)						
Monthly average	130,082	14.018	14.512	13.320	-0.494	0.698
Standard deviation	55,743	0.507	1.803	1.830	-1.296	-1.323
Minimum	46,592	13.226	12.039	10.829	1.187	2.397
Maximum	205,016	14.855	17.753	16.683	-2.898	-1.827
Range	158,424	1.629	5.714	5.854	-4.085	-4.225
Seven Orders – 17-months (Nov. 2000 – March 2002)						
Monthly average	139,628	14.003	14.677	13.521	-0.674	0.482
Standard deviation	50,747	0.534	1.839	1.833	-1.305	-1.299
Minimum	53,144	13.226	12.039	10.829	1.187	2.397
Maximum	205,016	14.855	17.753	16.683	-2.898	-1.827
Range	151,873	1.629	5.714	5.854	-4.085	-4.225
Upper Midwest Order 17-months (Nov. 2000 – March 2002)						
Monthly average	74,742	13.621	14.279	13.242	-0.658	0.379
Standard deviation	35,889	0.819	1.669	1.898	-0.850	-1.079
Minimum	20,396	12.575	11.771	10.425	0.805	2.150
Maximum	121,855	15.204	17.269	16.499	-2.066	-1.296
Range	101,459	2.628	5.499	6.074	-2.870	-3.446
Six Orders – 17-months (Nov. 2000 – March 2002)						
Monthly average	64,886	14.457	15.108	13.830	-0.652	0.627
Standard deviation	23,832	0.419	1.976	1.743	-1.557	-1.324
Minimum	26,536	13.769	12.308	11.234	1.461	2.535
Maximum	100,721	15.305	18.460	16.951	-3.155	-1.647
Range	74,186	1.536	6.152	5.717	-4.616	-4.181

Source: Appendix Table F-1, F-2 and F-3.

/1 For a detailed description of how average prices are computed, see Appendix D.

/2 For the Upper Midwest and the Six Orders, price statistics are provided for 17 months rather than 19 months. Data for September and October of 2000 are restricted due to Program participation by less than 3 handlers. Data provided by fewer than three parties is considered restricted because aggregation of such information may not prevent individual disclosure. For comparison purposes, statistics for the 17-month period are provided for the Seven Orders.

/3 Seven Orders refers to the seven Federal orders with participation in the Program during the study period—the Central, Mideast, Northeast, Pacific Northwest, Southeast, Upper Midwest, and Western orders. Six Orders refers to all of these orders except for the Upper Midwest.

Table 4-2: Contract Milk Price Comparisons^{1/}, Seven Orders^{2/} by Signing and Delivery Quarter Combination

Table 4-2a: Prices received for contract milk (\$/cwt, at test)

Signing Quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	13.911	14.599	14.115	13.788	13.579	14.087	R
4 th	---	R	13.791	13.580	13.368	13.950	R
2001							
1 st	---	---	14.146	12.780	12.710	12.968	14.025
2 nd	---	---	---	14.963	14.753	14.762	14.151
3 rd	---	---	---	---	15.648	16.008	15.852
4 th	---	---	---	---	---	15.377	14.008
2002							
1 st	---	---	---	---	---	---	13.657

Table 4-2b: Prices had there been no forward contracts (\$/cwt, at test)

Signing Quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	12.992	12.628	13.470	15.852	17.335	15.189	R
4 th	---	R	13.304	16.001	17.694	15.109	R
2001							
1 st	---	---	14.411	15.154	16.700	13.950	13.658
2 nd	---	---	---	16.931	17.644	14.959	13.484
3 rd	---	---	---	---	17.839	15.554	14.277
4 th	---	---	---	---	---	14.019	12.978
2002							
1 st	---	---	---	---	---	---	11.926

Table 4-2c: Federal milk order minimum prices (\$/cwt, at test)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	11.777	11.238	12.381	14.639	16.031	13.944	R
4 th	---	R	11.925	14.344	16.178	13.901	R
2001							
1 st	---	---	12.587	14.390	16.025	13.507	12.472
2 nd	---	---	---	15.630	16.435	14.231	12.965
3 rd	---	---	---	---	16.609	13.750	12.418
4 th	---	---	---	---	---	13.176	12.142
2002							
1 st	---	---	---	---	---	---	11.471

**Table 4-2 Continued: Contract Milk Price Comparisons^{1/}, Seven Orders^{2/}
by Signing and Delivery Quarter Combination**

Table 4-2d: Contract price minus non-contract price (\$/cwt)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	0.919	1.971	0.645	-2.064	-3.756	-1.102	R
4 th	---	R	0.487	-2.421	-4.326	-1.159	R
2001							
1 st	---	---	-0.265	-2.374	-3.990	-0.982	0.367
2 nd	---	---	---	-1.968	-2.891	-0.197	0.667
3 rd	---	---	---	---	-2.191	0.454	1.575
4 th	---	---	---	---	---	1.357	1.030
2002							
1 st	---	---	---	---	---	---	1.731

Table 4-2e: Contract price minus Federal order minimum price (\$/cwt)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	2.133	3.362	1.734	-0.852	-2.452	0.143	R
4 th	---	R	1.866	-0.764	-2.811	0.049	R
2001							
1 st	---	---	1.559	-1.610	-3.314	-0.539	1.553
2 nd	---	---	---	-0.668	-1.682	0.531	1.187
3 rd	---	---	---	---	-0.961	2.258	3.434
4 th	---	---	---	---	---	2.200	1.867
2002							
1 st	---	---	---	---	---	---	2.186

R=Restricted data. Data provided by fewer than three parties is considered restricted because aggregation of such information may not prevent individual disclosure.

/1 For a detailed description of how average prices are computed, see Appendix D.

/2 Seven Orders refers to the seven Federal orders with participation in the Program during the study period—the Central, Mideast, Northeast, Pacific Northwest, Southeast, Upper Midwest, and Western orders.

**Table 4-3: Contract Milk Price Comparisons^{1/}, Upper Midwest Federal Order
by Signing and Delivery Quarter Combination**

Table 4-3a: Prices received for contract milk (\$/cwt, at test)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	14.117	R	13.492	12.930	12.930	R	R
4 th	---	R	R	13.605	13.463	R	R
2001							
1 st	---	---	R	12.045	12.039	12.510	R
2 nd	---	---	---	15.467	14.742	14.260	14.400
3 rd	---	---	---	---	14.843	15.199	16.457
4 th	---	---	---	---	---	R	13.815
2002							
1 st	---	---	---	---	---	---	R

Table 4-3b: Prices had there been no forward contracts (\$/cwt, at test)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	13.164	R	13.174	15.430	17.006	R	R
4 th	---	R	R	15.381	17.458	R	R
2001							
1 st	---	---	R	14.413	16.125	13.478	R
2 nd	---	---	---	16.752	17.262	14.458	13.146
3 rd	---	---	---	---	16.394	14.843	15.172
4 th	---	---	---	---	---	R	12.816
2002							
1 st	---	---	---	---	---	---	R

Table 4-3c: Federal milk order minimum prices (\$/cwt, at test)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	11.636	R	11.766	13.924	15.481	R	R
4 th	---	R	R	13.864	16.196	R	R
2001							
1 st	---	---	R	14.166	15.915	13.340	R
2 nd	---	---	---	15.298	16.099	13.596	12.131
3 rd	---	---	---	---	16.263	13.489	12.257
4 th	---	---	---	---	---	R	12.034
2002							
1 st	---	---	---	---	---	---	R

**Table 4-3 Continued: Contract Milk Price Comparisons^{1/}, Upper Midwest Federal Order
by Signing and Delivery Quarter Combination**

Table 4-3d: Contract price minus non-contract (\$/cwt)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	0.953	R	0.318	-2.499	-4.076	R	R
4 th	---	R	R	-1.775	-3.995	R	R
2001							
1 st	---	---	R	-2.367	-4.086	-0.968	R
2 nd	---	---	---	-1.285	-2.519	-0.198	1.254
3 rd	---	---	---	---	-1.552	0.356	1.285
4 th	---	---	---	---	---	R	0.999
2002							
1 st	---	---	---	---	---	---	R

Table 4-3e: Contract price minus Federal order minimum price (\$/cwt)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	2.480	R	1.726	-0.994	-2.552	R	R
4 th	---	R	R	-0.258	-2.732	R	R
2001							
1 st	---	---	R	-2.121	-3.876	-0.830	R
2 nd	---	---	---	0.168	-1.357	0.664	2.268
3 rd	---	---	---	---	-1.420	1.710	4.200
4 th	---	---	---	---	---	R	1.782
2002							
1 st	---	---	---	---	---	---	R

R=Restricted data. Data provided by fewer than three parties is considered restricted because aggregation of such information may not prevent individual disclosure.

^{1/} For a detailed description of how average prices are computed, see Appendix D.

Table 4-4: Contract Milk Price Comparisons^{1/}, Six Orders^{2/} by Signing and Delivery Quarter Combination

Table 4-4a: Prices received for contract milk (\$/cwt, at test)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	13.691	R	14.326	13.997	13.740	R	---
4 th	---	R	R	13.538	13.246	R	---
2001							
1 st	---	---	R	14.366	14.461	14.632	R
2 nd	---	---	---	14.868	14.756	14.912	14.133
3 rd	---	---	---	---	16.201	16.425	15.670
4 th	---	---	---	---	---	R	14.403
2002							
1 st	---	---	---	---	---	---	R

Table 4-4b: Prices had there been no forward contracts (\$/cwt, at test)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	12.808	R	13.570	15.955	17.417	R	---
4 th	---	R	R	17.003	17.993	R	---
2001							
1 st	---	---	R	16.755	18.199	15.665	R
2 nd	---	---	---	16.965	17.773	15.109	13.509
3 rd	---	---	---	---	18.831	15.921	14.008
4 th	---	---	---	---	---	R	13.310
2002							
1 st	---	---	---	---	---	---	R

Table 4-4c: Federal milk order minimum prices (\$/cwt, at test)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	11.928	R	12.589	14.814	16.168	R	---
4 th	---	R	R	15.119	16.156	R	---
2001							
1 st	---	---	R	14.874	16.312	14.113	R
2 nd	---	---	---	15.693	16.548	14.421	13.025
3 rd	---	---	---	---	16.847	13.885	12.467
4 th	---	---	---	---	---	R	12.363
2002							
1 st	---	---	---	---	---	---	R

Table 4-4 Continued: Contract Milk Price Comparisons^{1/}, Six Orders^{2/} by Signing and Delivery Quarter Combination

Table 4-4d: Contract price minus non-contract (\$/cwt)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	0.883	R	0.756	-1.958	-3.676	R	---
4 th	---	R	R	-3.465	-4.746	R	---
2001							
1 st	---	---	R	-2.388	-3.738	-1.033	R
2 nd	---	---	---	-2.096	-3.016	-0.197	0.625
3 rd	---	---	---	---	-2.631	0.504	1.663
4 th	---	---	---	---	---	R	1.093
2002							
1 st	---	---	---	---	---	---	R

Table 4-4e: Contract price minus Federal order minimum price (\$/cwt)

Signing quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	1.764	R	1.737	-0.817	-2.427	R	---
4 th	---	R	R	-1.581	-2.910	R	---
2001							
1 st	---	---	R	-0.507	-1.851	0.519	R
2 nd	---	---	---	-0.825	-1.792	0.491	1.108
3 rd	---	---	---	---	-0.646	2.540	3.204
4 th	---	---	---	---	---	R	2.040
2002							
1 st	---	---	---	---	---	---	R

R=Restricted data. Data provided by fewer than three parties is considered restricted because aggregation of such information may not prevent individual disclosure.

/1 For a detailed description of how average prices were computed, see Appendix D.

/2 Six Orders refers to the six Federal orders with participation in the Program other than the Upper Midwest—the Central, Mideast, Northeast, Pacific Northwest, Southeast, and Western orders.

Table 4-5: Gross Cash Receipts for Contract Milk in Seven Orders^{1/} With Comparisons

Year and Month	Milk volumes		Gross cash receipts before deductions for hauling, promotion, and marketing charges ^{2/}				Differences in gross cash receipts	
	Total pooled milk of Program ^{3/} producers	Contract Milk	Total pooled milk of Program producers	Contract milk	Contract milk had there been no contract	Contract milk at Federal order minimum prices	Contract minus no contract	Contract minus Federal order minimum
	<i>1000s lbs.</i>		<i>\$1000</i>					
2000								
Sept.	58,764.7	46,592.3	8,112.1	6,536.3	6,097.8	5,507.7	438.5	1,028.6
Oct.	65,796.1	51,287.6	9,179.0	7,320.5	6,732.5	5,855.0	588.0	1,465.4
Nov.	67,250.8	53,143.8	9,547.5	7,857.7	6,398.1	5,755.0	1,459.6	2,102.7
Dec.	71,402.2	54,456.4	10,169.0	7,989.4	6,929.5	6,263.7	1,059.9	1,725.7
2001								
Jan.	181,713.3	127,384.0	24,785.0	17,845.2	16,381.3	14,847.9	1,463.9	2,997.3
Feb.	180,275.9	126,135.4	24,581.6	17,433.1	16,463.4	14,793.9	969.7	2,639.2
Mar.	212,767.2	144,748.2	29,760.8	20,059.6	20,488.0	18,460.6	-428.4	1,599.0
Apr.	251,424.6	176,840.5	35,149.2	23,994.7	25,719.6	23,566.4	-1,724.8	428.4
May	221,123.1	142,175.4	32,061.8	19,046.5	22,823.6	21,046.5	-3,777.1	-2,000.1
June	230,861.1	151,544.5	34,014.6	20,315.8	25,628.2	23,646.9	-5,312.5	-3,331.1
July	243,640.2	169,016.0	35,434.1	22,617.7	28,909.2	26,681.8	-6,291.5	-4,064.2
Aug.	291,887.9	195,752.7	42,283.0	25,890.8	33,303.0	31,244.5	-7,412.2	-5,353.7
Sept.	290,659.5	205,016.2	43,505.3	28,331.7	36,397.2	34,202.8	-8,065.5	-5,871.1
Oct.	236,533.4	170,891.6	34,946.1	24,004.0	28,447.3	26,489.4	-4,443.3	-2,485.4
Nov.	282,415.6	195,199.0	40,053.1	27,929.3	27,445.3	26,036.3	483.9	1,892.9
Dec.	298,089.6	199,839.9	41,103.3	27,526.7	27,532.3	25,643.0	-5.6	1,883.8
2002								
Jan.	150,619.4	86,514.1	21,565.8	12,688.1	12,184.3	11,207.6	503.8	1,480.5
Feb.	103,385.6	74,383.1	15,071.7	11,050.0	10,331.9	9,420.0	718.1	1,630.0
Mar.	161,509.9	100,636.4	22,264.2	14,541.7	12,925.0	12,002.3	1,616.7	2,539.4
Totals	3,600,120.1	2,471,557.3	513,587.0	342,978.7	371,137.4	342,671.3	-28,158.7	307.4

^{1/} Seven Orders refers to the seven Federal orders with participation in the Program during the study period—the Central, Mideast, Northeast, Pacific Northwest, Southeast, Upper Midwest, and Western orders.

^{2/} For a description of how gross values are computed, see Appendix D.

^{3/} Program refers to the Dairy Forward Pricing Pilot Program.

Table 4-6: Comparison of Chicago Mercantile Exchange (CME) Class III Futures Prices to Federal Order Class III Prices

Table 4-6a: CME average Class III futures prices, weighted by Program^{1/} pounds^{2/}

Signing Quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	10.992	10.897	10.564	10.631	11.253	---	---
4 th	---	9.490	9.864	10.118	11.006	11.250	---
2001							
1 st	---	---	10.285	11.133	12.241	11.851	11.147
2 nd	---	---	---	13.395	14.158	12.948	11.611
3 rd	---	---	---	---	15.168	13.782	12.018
4 th	---	---	---	---	---	11.562	11.700
2002							
1 st	---	---	---	---	---	---	11.439

Table 4-6b: Federal Order average Class III prices at 3.5 percent butterfat, weighted by Program Pounds

Signing quarter	Delivery quarter						
	2000 3rd	2000 4th	2001 1 st	2001 2 nd	2001 3rd	2001 4th	2002 1st
2000							
3 rd	10.753	9.320	10.575	13.575	15.572	---	---
4 th	---	9.028	10.571	13.281	15.638	12.697	---
2001							
1 st	---	---	11.165	13.659	15.653	12.331	11.552
2 nd	---	---	---	14.639	15.674	12.505	11.342
3 rd	---	---	---	---	15.848	12.484	11.384
4 th	---	---	---	---	---	11.585	11.305
2002							
1 st	---	---	---	---	---	---	10.690

Table 4-6 Continued: Comparison of Chicago Mercantile Exchange (CME) Class III Futures Prices to Federal Order Class III Prices

Table 4-6c: CME Class III futures prices minus Federal order Class III prices

Signing quarter	Delivery quarter						
	2000 3rd	2000 4 th	2001 1 st	2001 2 nd	2001 3rd	2001 4th	2002 1st
2000							
3 rd	0.239	1.577	-0.010	-2.944	-4.319	---	---
4 th	---	0.462	-0.707	-3.163	-4.632	-1.447	---
2001							
1 st	---	---	-0.881	-2.526	-3.412	-0.480	-0.406
2 nd	---	---	---	-1.243	-1.516	0.443	0.269
3 rd	---	---	---	---	-0.680	1.298	0.634
4 th	---	---	---	---	---	-0.023	0.394
2002							
1 st	---	---	---	---	---	---	0.749

Source for daily futures settlement prices: The Wisconsin Center for Dairy Research and Department of Agricultural and Applied Economics at the University of Wisconsin-Madison, http://www.aae.wisc.edu/future/front_futures.htm.

/1 Program refers to Dairy Forward Pricing Pilot Program.

/2 To calculate average CME Class III futures prices for each *quarterly* signing-delivery combination, we first calculate simple averages for each *monthly* signing-delivery combination using all corresponding daily settlement prices. Quarterly signing-delivery combination averages are calculated by weighting corresponding monthly combinations by Program contract pounds applicable to each monthly combination.

/3 To calculate Federal Order average Class III prices at 3.5 percent butterfat, quarterly signing-delivery combination averages are calculated by weighting announced Class III prices by Program contract pounds applicable to each monthly combination.

Table 4-7: Comparison of Program^{1/} Prices and Non-Contract Prices Protected by Chicago Mercantile Exchange (CME) Class III Futures

Table 4-7a - Price received for contract milk, (\$/cwt, at test)^{2/}

Signing Quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	13.911	14.599	14.115	13.788	13.579	--	--
4 th	---	R	13.791	13.580	13.368	13.950	--
2001							
1 st	---	---	14.146	12.780	12.710	12.968	14.025
2 nd	---	---	---	14.963	14.753	14.762	14.151
3 rd	---	---	---	---	15.648	16.008	15.852
4 th	---	---	---	---	---	15.377	14.008
2002							
1 st	---	---	---	---	---	---	13.657

Table 4-7b: Net price received: Price at test without contract plus futures gain or loss, (\$/cwt, at test)^{3/}

Signing Quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	13.231	14.205	13.460	12.908	13.016	--	--
4 th	---	R	12.597	12.838	13.062	13.663	--
2001							
1 st	---	---	13.531	12.629	13.288	13.471	13.252
2 nd	---	---	---	15.688	16.128	15.402	13.753
3 rd	---	---	---	---	17.159	16.852	14.911
4 th	---	---	---	---	---	13.996	13.372
2002							
1 st	---	---	---	---	---	---	12.675

Table 4-7 Continued: Comparison of Program^{1/} Prices and Non-Contract Prices Protected by Chicago Mercantile Exchange (CME) Class III Futures

Table 4-7c: Contract price minus non-contract price adjusted by futures gain or loss, (\$/cwt, at test)

Signing Quarter	Delivery quarter						
	2000 3 rd	2000 4 th	2001 1 st	2001 2 nd	2001 3 rd	2001 4 th	2002 1 st
2000							
3 rd	0.680	0.394	0.655	0.880	0.563	---	---
4 th	---	-R	1.194	0.742	0.305	0.287	---
2001							
1 st	---	---	0.615	0.152	-0.577	-0.503	0.773
2 nd	---	---	---	-0.725	-1.375	-0.640	0.399
3 rd	---	---	---	---	-1.511	-0.844	0.941
4 th	---	---	---	---	---	1.380	0.636
2002							
1 st	---	---	---	---	---	---	0.982

R=Restricted data. Data provided by fewer than three parties is considered restricted because aggregation of such information may not prevent individual disclosure.

/1 Program refers to Dairy Forward Pricing Pilot Program.

/2 Prices in Table 4-7a are the same as prices in Table 4-2a.

/3 Table 4-7b is calculated by adding Table 4-2b and Table 4-6c.

Table 4-8 - Contract Prices Without Premiums or PPDs for April through August 2002 Delivery

2002, Month	Contracts priced per cwt. based on Class III milk price at 3.5% butterfat				Contracts based on component prices ^{2/}			
	Contracts ^{1/}	Average contract price	Class III price at 3.5% BF	Contract price minus Class III price	Contracts ^{1/}	Average contract price at 3.5% BF	Class III price at 3.5% BF	Contract price minus Class III price
April	102	12.36	10.85	1.51	23	12.44	10.85	1.59
May	93	12.35	10.82	1.53	24	12.40	10.82	1.58
June	94	12.40	10.09	2.31	24	12.45	10.09	2.36
July	84	12.54	9.33	3.21	25	12.89	9.33	3.56
Aug.	78	12.47	9.54	2.93	25	12.48	9.54	2.94
Averages	90	12.42	10.13	2.30	24	12.53	10.13	2.41

1/ Contracts signed as of March 2002 for delivery through August 2002.

2/ Component pricing contracts converted to 3.5% BF, 3.1% protein, and 5.9% other solids.

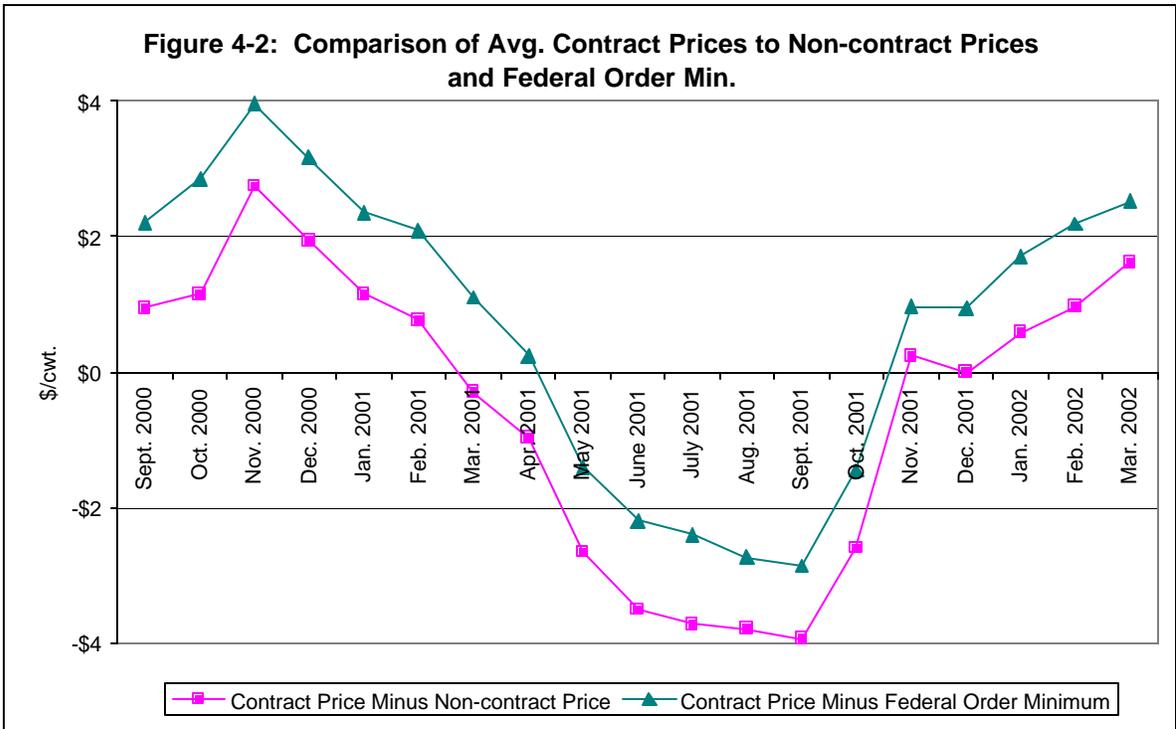
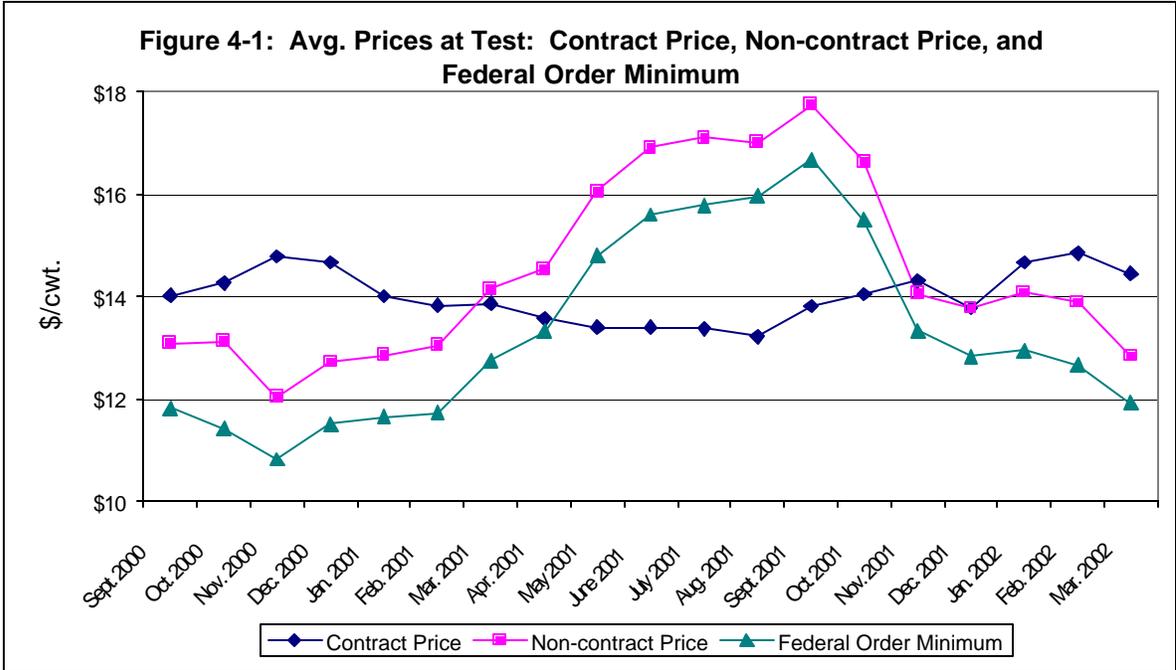


Figure 4-3: Average Prices Received For Contract Milk Per Signing and Delivery Quarter

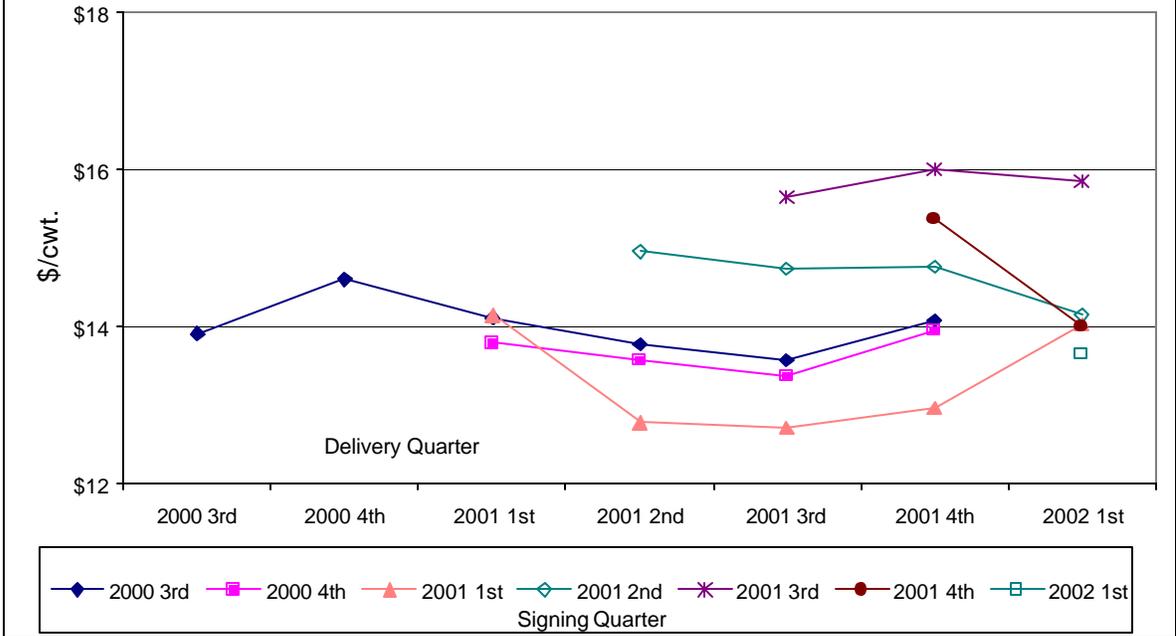


Figure 4-4: Contract Price Minus Non-contract Price Per Signing Quarter and Delivery Quarter



Figure 4-5: Contract Volume and Contract Price Minus Non-Contract Price

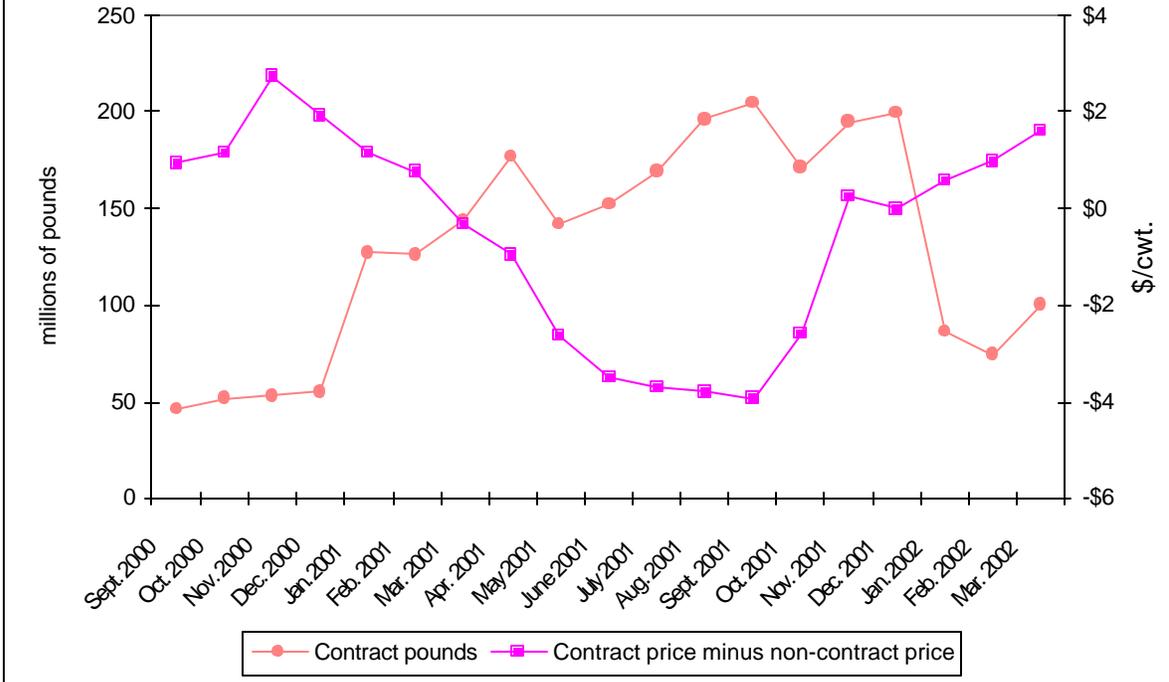


Figure 4-6: CME Cheese Activity, Three Month Moving Average, January 1998-March 2002

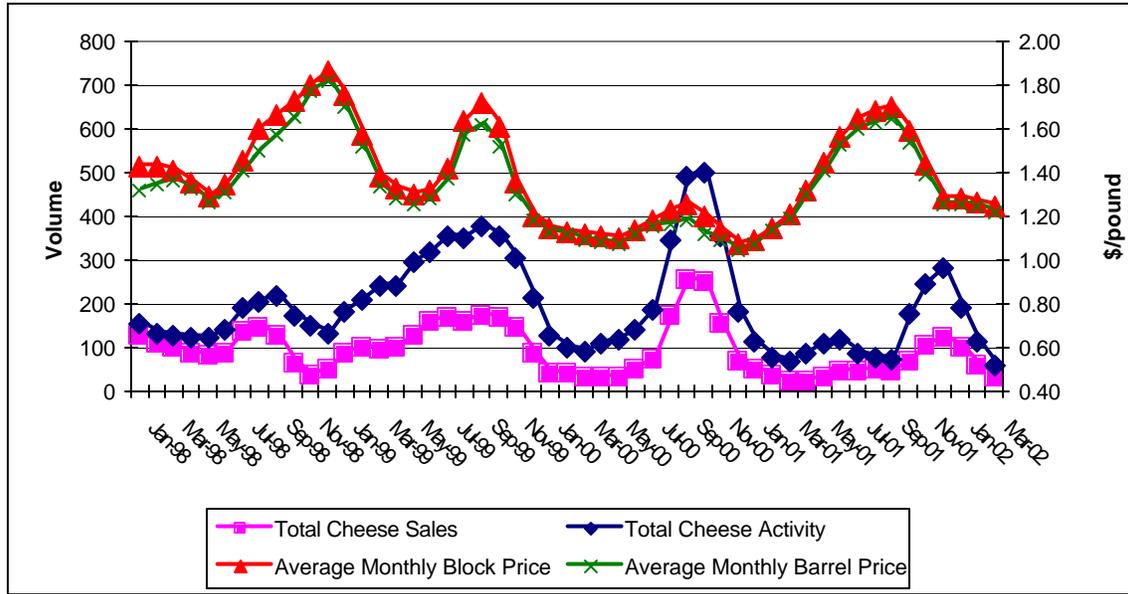
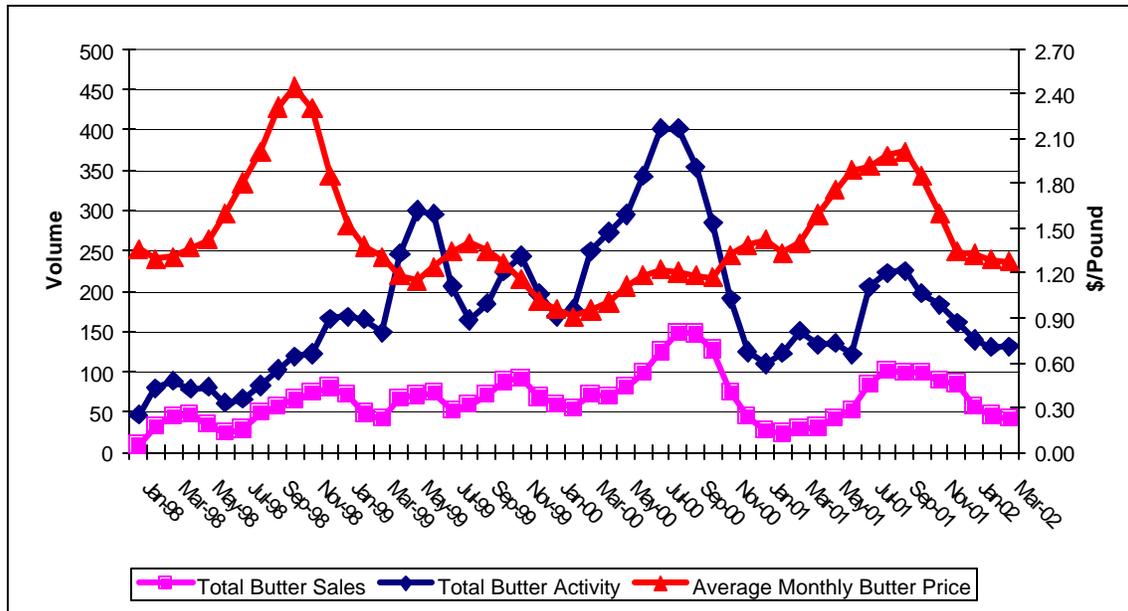


Figure 4-7: CME Butter Activity, Three Month Moving Average, January 1998-March 2002



Chapter 5

Summary and Observations

This study examines the Dairy Forward Pricing Pilot Program (Program) over the period of time from September 2000 through March 2002, a period of nineteen months.

As measured in terms of reduction in price volatility, the Program has been effective. The average monthly price received for contract milk was \$14.02, ranging from a low of \$13.23 to a high of \$14.86. The average monthly price of the same milk, had it not been under contract, was \$14.51, ranging from a low of \$12.04 to a high of \$17.75. Over the study period, the volume of milk marketed under contract was greatest in months when contract prices were below non-contract prices.

Contract prices are influenced by forecasts of market conditions at the time contracts are signed. In this respect, the behavior pattern is similar to that of the CME Class III futures market. Returns to Program participating producers have generally been as good as, if not better than, returns to producers from hedging on the futures market. Data for the study period, and limited information concerning prices past the study period, indicate that prices received for contract milk may be about the same as long-run average non-contract prices for U.S. Grade A milk.

Contracts under the Program have taken many forms. Contracts vary widely in contract quantity, duration, length from signing to first delivery, quantifying method, and pricing method. In some cases, contracts are very detailed--designed to cover nearly any contingency. In other cases, contract terms are vague and leave room for interpretation. This sometimes leads to ambiguity concerning whether or not Federal Order minimum price requirements have been met for the portion of participant milk not under contract. At least one legal action has been brought because of misunderstanding of contract provisions. Arbitration hearings have dealt with a dispute between nineteen producers in Wisconsin who claim that the contracts they signed with Kraft Foods, Inc. had an escape clause.¹ It appears important that both parties of a Program contract have professional assistance in understanding all provisions.

Participation in the Program has been small when considered in terms of numbers of producers, numbers of handlers, or milk quantities. A total of 1,452 producers and 22 handlers participated in the program over the study period. On a monthly average basis, 3.9 percent of eligible producers participated in the program, and 5.7 percent of proprietary manufacturing plants participated. Contract milk averaged 5.3 percent of pooled milk received from eligible producers per month. Participation by producers peaked in April 2001 with 1,141 producers participating, but dropped off sharply in 2002, reaching a low point of 137 producers in February 2002. Participation by handlers peaked in September and October 2001 with 21 handlers participating. Participation

¹ Article by Mike Ivey, "Dairy Farmers Challenge Kraft Over Pricing Contract," *The Capital Times*, Madison WI, September 12, 2002.

declined to 16 handlers by March 2002. For participating handlers, the average percentage of eligible producer milk under contract in markets with participation in 2001 ranged between 23 and 30 percent. The percentage dropped to less than 15 percent in 2002.

During the study period, there was a decrease in the percentage of small producers participating in the Program. More than half of the participants marketed less than 100,000 pounds per month at the start of the study period. The percentage in this small-producer category had declined to less than 20 percent by the end of the study period. By contrast, the percentage of large producers--those marketing more than 1 million pounds per month--made up around 3 percent of the total at the beginning of the study period, and increased to around 20 percent by 2002.

Although there has been forward contract activity in seven of the eleven Federal Milk Marketing Orders, activity has been concentrated overwhelmingly among cheese manufacturers in the north central area of the country. Most of the participating producers and handlers pooled milk on the Upper Midwest, Central, and Mideast orders. On average about 46 percent of the contract milk has been pooled on the Upper Midwest order. Of the total number of producers, 45 percent have farms located in Wisconsin while 33 percent have farms located in Minnesota. Although the Central order had fewer participating producers than the Upper Midwest, the Central order had the highest participation rate among eligible producers in most months. With the exception of the four beginning months of the Program, more than half of the participating handlers have had milk pooled on the Upper Midwest order.

Our Producer Survey results indicate that participating producers were generally more accustomed to using price protection tools than were non-participants. Nearly three-fourths of participants indicated that they contracted in order to assure a more stable cash flow. Participants were more likely to have more than one potential buyer than non-participants, and they were much more aware of handler contract offerings than non-participants. Most participants relied on futures markets or their own forecasts to evaluate contract prices. Most participants whose contract prices were below their non-contract prices indicated that they would discontinue forward contracting or reduce contract volumes. The result is consistent with the reduction in participation for 2002.

The Plant Survey indicates that many participating plants use the Program contracts in combination with other price protection programs for milk, dairy products, and other inputs. Plants reported using a variety of strategies to cover contracts with producers. Most plants reported that they offered the same contract terms to all producers. Over a third of participants indicated that forward contracting had resulted in more long-term contracting of dairy products. There were mixed responses concerning the Program's effect on the ability to attract milk for manufacturing purposes. Thirty-eight percent of participants indicated that procurement of manufacturing milk had been made easier, while the majority of non-participating plants indicated that the Program had no effect on their ability to obtain milk. Although some Class I plants indicated that the Program had

affected their ability to attract a Class I milk supply, most indicated that the Program had no such effect.